



U.S. Department of the Interior
Bureau of Land Management
Royal Gorge Field Office, Rocky Mountain District
Cañon City, Colorado



U.S. Department of Agriculture
U.S. Forest Service
Pike and San Isabel National Forests
Salida, Colorado

Browns Canyon National Monument

Draft Resource Management Plan / Environmental Impact Statement

Volume 1: Chapters 1 - 3

October 2019



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BLM Mission

It is the mission of the Bureau of Land Management to sustain health, diversity, and productivity of the public lands for use and enjoyment of present and future generations

USFS Mission

The mission of the USDA Forest Service is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations

BLM/CO/PL-20-001

Browns Canyon National Monument Resource Management Plan and Environmental Impact Statement

DRAFT

Volume 1 of 2 Chapters 1 – 3

Prepared by

**U.S. Department of the Interior
Bureau of Land Management
Royal Gorge Field Office
Rocky Mountain District
Cañon City, Colorado**

and

**U.S. Department of Agriculture
U.S. Forest Service
Pike and San Isabel National Forests and
Cimarron and Comanche National Grasslands
Salida, Colorado**

October 2019

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Royal Gorge Field Office
3028 E Main St.
Cañon City, CO 81212



In reply refer to: 1610-5.G.1.4

SEP 24 2019

Dear Reader:

Attached for your review and comment is the Draft Resource Management Plan-Forest Plan amendment/Draft Environmental Impact Statement (Draft RMP-FP/EIS) for the Browns Canyon National Monument (BCNM) prepared by the Colorado Bureau of Land Management (BLM) Royal Gorge Field Office (RGFO) and Forest Service (USFS), Pike-San Isabel National Forests and Comanche-Cimarron National Grasslands (PSICC). BLM and USFS prepared this document in consultation with cooperating agencies, and in accordance with the National Environmental Policy Act of 1969, as amended, the Federal Land Policy and Management Act of 1976, as amended, National Forest Management Act of 1976, as amended, implementing regulations, the BLM's Land Use Planning Handbook (H-1601-1), and other applicable law and policy.

The planning area consists of approximately 21,600 acres, all occurring in Chaffee County, Colorado, of which RGFO administers 9,790 acres while 11,810 acres are administered by PSICC. When approved, this RMP will replace a portion of the Royal Gorge Resource Area RMP (1996), amend the PSICC Forest Plan (1984) and will guide the management of public lands administered by the RGFO and PSICC into the future. The Draft RMP-FP/EIS and supporting information is available on the project web site at: <https://go.usa.gov/xn2eC>.

The BLM encourages the public to provide information and comments pertaining to the analysis presented in the Draft RMP-FP/EIS. We are particularly interested in feedback concerning the adequacy and accuracy of the proposed alternatives, the analysis of their respective management decisions, and any new information that would help the BLM as it develops the plan. In developing the Proposed RMP-FP/Final EIS, which is the next phase of the planning process, the decision maker may select various management decisions from each of the alternatives analyzed in the Draft RMP-FP/EIS for the purpose of creating a management strategy that best meets the needs of the resources and values in this area under the BLM multiple use and sustained yield mandate. As a member of the public, your timely comments on the Draft Resource Management Plan-Forest Plan amendment and Associated Environmental Impact Statement will help formulate the Proposed RMP-FP/Final EIS. Comments will be accepted for ninety (90) calendar days following the Environmental Protection Agency's (EPA) publication of its Notice of Availability in the Federal Register. The BLM can best utilize your comments and resource information submissions if received within the review period.

Comments may be submitted electronically on the project web site at: <https://go.usa.gov/xn2eC>. Comments may also be submitted by mail or hand delivered to:

BCNM RMP/EIS, 5575 Cleora Road, Salida, CO 81201. To facilitate analysis of comments and information submitted, we strongly encourage you to submit comments in an electronic format.

Your review and comments on the content of this document are critical to the success of this planning effort. If you wish to submit comments on the Draft RMP-FP/EIS, we request that you make your comments as specific as possible. Comments will be more helpful if they include suggested changes, sources, or methodologies, and reference to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision making process, although they will not receive a formal response from the BLM or USFS.

Before including your address, phone number, email address, or other personal identifying information in your comment, be advised that your entire comment - including your personal identifying information - may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Public meetings to provide an overview of the document, respond to questions, and take public comments will be announced by local media, website, and/or public mailings at least 15 days in advance.

Digital copies of the Draft RMP-FP/EIS have been sent to affected Federal, state and local government agencies and tribal governments. Copies of the Draft RMP-FP/EIS are available for public inspection at USFS PSICC 5575 Cleora Road, Salida, CO 81201 and BLM RGFO 3028 E Main St. Cañon City, CO 81212 and on the BLM website at <https://go.usa.gov/xn2eC>.

Thank you for your continued interest in the Draft RMP-FP/EIS for the Browns Canyon National Monument, Colorado. We appreciate the information and suggestions you contribute to the planning process. For additional information or clarification regarding this document or the planning process, please contact Joseph Vieira, Project Manager, telephone 719-246-9966; address 5575 Cleora Road, Salida, CO 81201; email blm_co_browncanyon@blm.gov.

Sincerely,



Jamie E. Connell, State Director
Bureau of Land Management

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ACRONYMS AND ABBREVIATIONS

ACEC	Area of Critical Environmental Concern
ABA	Architectural Barriers Act
ADA	Americans with Disabilities Act
AHRA	Arkansas Headwaters Recreation Area
AIM	Assessment, Inventory and Monitoring
ALAN	artificial light at night
amsl	above mean sea level
AQRV	Air Quality Related Value
ATV	all-terrain vehicle
AUM	animal unit month
BASI	best available scientific information
BCNM	Browns Canyon National Monument
BEIG	Built Environment Image Guide
BLM	Bureau of Land Management
BMP	best management practice
CAA	Clean Air Act
CDPHE	Colorado Department of Public Health and Environment
CFR	Code of Federal Regulations
CML	Cooperative Management Lands
CPW	Colorado Parks and Wildlife
CRA	Colorado Roadless Area
DOI	U.S. Department of the Interior
EIS	Environmental Impact Statement
ERMA	extensive recreation management area
FAR	functioning at-risk
FLPMA	Federal Land Policy and Management Act
FSH	U.S. Forest Service Handbook
FSM	U.S. Forest Service Manual
FSTAG	Forest Service Trail Accessibility Guidelines
IDT	interdisciplinary team
IB	Information Bulletin
IM	Instructional Memorandum
MIM	Multiple Indicators Monitoring
monument	Browns Canyon National Monument
MZ	management zone

Acronyms and Abbreviations

NAAQS	national ambient air quality standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NF	non-functioning
NFS	National Forest System
NFSR	National Forest System Road
NFST	National Forest System Trail
NHPA	National Historic Preservation Act
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NWSRS	National Wild and Scenic River System
NRV	natural range of variability
OHV	off-highway vehicle
ORV	outstandingly remarkable value
R&I	relevant and important
R&PP	Recreation and Public Purpose
PFC	Proper Functioning Condition
PSICC	Pike and San Isabel National Forests and Cimarron and Comanche National Grasslands
RGFO	Royal Gorge Field Office
RGRMP	Royal Gorge Resource Area Resource Management Plan
R&I	relevant and important
RMIS	Recreation Management Information System
RMP	resource management plan
RMZ	recreation management zones
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
ROVs	resources, objects, and values
ROW	right-of-way
SCC	Species of Conservation Concern
SHPO	State Historic Preservation Office
SIL	Scenic Integrity Levels
SIO	Scenic Integrity Objectives
SMS	Scenery Management System
SRMA	special recreation management area
SRP	Special Recreation Permit
SUA	Special Use Authorization
SUP	Special Use Permit

Acronyms and Abbreviations

TMP	Travel Management Plan
UAS	Unmanned Aircraft System
U.S.	United States
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WSA	Wilderness Study Area
WSR	Wild and Scenic River

Note: For a bibliography of documents used directly or indirectly during the preparation of this RMP/EIS, a glossary of specialized terms, and a key word index, refer to appendices A through C, respectively.

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EXECUTIVE SUMMARY

The Bureau of Land Management (BLM) and U.S. Forest Service (USFS) prepared this Resource Management Plan/Environmental Impact Statement (RMP/EIS) to provide comprehensive management direction for the Browns Canyon National Monument (BCNM or monument). BCNM was established under Presidential Proclamation 9232 (February 19, 2015) as an area of 21,604 acres.

BCNM encompasses BLM and USFS lands and includes BLM-managed Browns Canyon Wilderness Study Area and USFS-managed Aspen Ridge Roadless Area. In addition, a portion of the Arkansas Headwaters Recreation Area—cooperative management lands along the Arkansas River administered by the USFS, the BLM, and Colorado Parks and Wildlife—is included within the monument. The BLM refers to BCNM’s unique *resources, objects, and values*, including resource use such as livestock grazing and recreation, as ROVs. Presidential Proclamation 9232 requires that monument ROVs be protected for the benefit of all Americans.

The proclamation states: “For purposes of protecting and restoring the objects identified above, the Secretaries shall jointly prepare a management plan for the monument and shall promulgate such regulations for its management as deemed appropriate.” The purpose of the joint RMP is to provide strategic direction and guidance for the BLM’s and the USFS’s allocation of resources and management of the public lands within the BCNM pursuant to the multiple-use and sustained yield mandates of the Federal Land Policy and Management Act of 1976, the National Forest Management Act of 1976, and the Multiple Use Sustained Yield Act of 1960.

Public Outreach and Issues

The BLM and USFS identified issues to be addressed in the RMP and EIS through public and internal scoping and through outreach to cooperating agencies and Tribal entities. The formal public scoping process began on May 14, 2019, with publication of the Notice of Intent in the Federal Register informing the public of the intent to develop an RMP and associated EIS (84 Fed. Reg. 21352, [May 14, 2019]). The public scoping period closed on June 20, 2019 for a total scoping period of 38 days. Three public scoping meetings and two online webinars were held during this period. The comment parsing process resulted in approximately 472 individual comments, which were then coded according to planning issue categories. A total of 125 unique comment letters were submitted. The majority of comments received were related to recreation (31 percent), travel management (20 percent), and special designations (11 percent). Many of the comments received address implementation-level activities or actions that do not need RMP decisions to implement, such as inventorying, monitoring, agreements, and standards. While specific recommendations on implementation decisions may not be addressed directly in the RMP/EIS, these comments will be utilized to inform the RMP’s allocation and management decisions, as well as future implementation decisions.

Management Alternatives

The EIS considers three alternatives to address the identified planning issues:

Alternative A (Current Management/No Action): Continues existing management in the Planning Area, including management direction from Presidential Proclamation 9232.

In general, current management reflects decisions in the “Royal Gorge Resource Area Record of Decision and Approved Resource Management Plan” (BLM 1996) and “Pike and San Isabel National Forests; Cimarron and Comanche National Grasslands Land and Resource Management Plan” (USFS 1984), as amended. In addition, Alternative A reflects management direction in Presidential Proclamation 9232, which imposes restrictions to resource uses and protections for ROVs. Although this alternative would not meet the purpose and need for the BCNM RMP, it is included to allow for comparison of existing management with the action alternatives.

Alternative B: Focuses on protecting monument ROVs (e.g., cultural resources, wildlife, vegetation, soil/water, river adventure, wilderness hiking, Tribal use, livestock grazing use, quiet-solitude-naturalness use) while providing for primarily non-motorized recreation activities, such as hiking and boating, in a predominantly primitive and backcountry setting. Alternative B limits future recreational infrastructure development while still allowing varied river-based and upland outdoor recreation experiences and outcomes.

Alternative C (Preferred Alternative): Focuses on a wider variety of river and upland recreation opportunities in a range of settings to enhance the local economy and quality of life for residents and visitors. Similar to Alternative B, Alternative C includes protections for monument ROVs. However, Alternative C emphasizes more proactive management of natural resources to address stressors and drivers, and a wider range of recreation opportunities and access as compared with management under Alternative B.

Analysis of Impacts

Impacts can be beneficial or adverse, may result from an action directly or indirectly, or cumulatively with other actions, and can be long-term or short-term. The analysis in this document considers potential effects from the management of each individual resource on other resources. The discussion of environmental consequences focuses on the most critical impacts in order to streamline the analysis and address the most important issues of concern for the public, cooperating agencies, and the BLM and USFS. If a particular impact is not discussed, it is because no such impact is expected or the impact is not within the scope of this RMP/EIS.

A table summarizing and comparing the impacts anticipated from implementing the alternatives is presented in Chapter 2. A detailed description of environmental consequences is included in Chapter 3.

1.0 INTRODUCTION

The Bureau of Land Management (BLM) and U.S. Forest Service (USFS) prepared this Resource Management Plan/Environmental Impact Statement (RMP/EIS) to provide comprehensive management direction for the Browns Canyon National Monument (BCNM or monument). BCNM was established under Presidential Proclamation 9232 (February 19, 2015) as an area of 21,604 acres. The monument lies within Chaffee County, Colorado (Appendix D, Map 1). This RMP will replace the BLM's 1996 "Royal Gorge Resource Area Resource Management Plan" (RGRMP; BLM 1996) for lands within the BCNM Planning Area. The "Draft Eastern Colorado Resource Management Plan and Environmental Impact Statement" (Draft Eastern Colorado RMP/EIS), when complete, will apply to other lands managed by the Royal Gorge Field Office (RGFO). This RMP will also amend the USFS's 1984 "Pike and San Isabel National Forests; Cimarron and Comanche National Grasslands Land and Resource Management Plan" (USFS 1984).

Monument establishment under the Antiquities Act (1906) afforded Federal protections for the area and requires development of a RMP to steward *resources, objects, and values* (ROVs), including resource uses to protect and preserve the area's unusual and scientifically significant geology and elevation range (a roughly 3,000-foot range) that support a diversity of plants and wildlife. Presidential Proclamation 9232 specifically recognizes that the monument has a "wealth of scientifically significant geological, ecological, riparian, cultural, and historic resources, and is an important area for studies of paleoecology, mineralogy, archaeology, and climate change." As summarized in the "Browns Canyon National Monument Management Plan – Environmental Impact Statement Planning Assessment" (Planning Assessment; BLM and USFS 2018a), the monument provides outdoor recreation opportunities in the BCNM, including world-class river rafting, hunting, fishing, hiking, camping, mountain biking, and horseback riding, and implicitly recognizes the role of recreation and public lands livestock grazing to the monument region and economy. Presidential Proclamation 9232 requires ensuring that the monument ROVs are protected and remain for the benefit of all Americans. A complete summary of the monument ROVs are presented in Appendix E.

BCNM encompasses BLM and USFS lands and includes the Browns Canyon Wilderness Study Area (WSA) and USFS Aspen Ridge Roadless areas (Table 1.2-1 and Appendix D, Map 2). In addition, a portion of the Arkansas Headwaters Recreation Area (AHRA)—cooperatively managed lands along the Arkansas River administered by the USFS, the BLM, and Colorado Parks and Wildlife (CPW)—is included within the monument.

This RMP is strategic in nature and does not attempt to prescribe detailed management direction to cover every possible situation. The RMP employs land use allocations defined through goals and objectives, which are broad and adaptive for the purpose of reference during future activities or for amendment to update management direction based on new knowledge and information. Following the signing of the Record of Decision (ROD), the BLM and USFS will consider additional specific implementation-level plans and projects. The BLM's and USFS's decision-making process for these future activities will tier to the programmatic analysis in this EIS and include appropriate site-specific National Environmental Policy Act (NEPA) review. While all components necessary for protection and interpretation of the scientific, Tribal, and historic objects of the monument are included, the RMP also provides flexibility needed to

respond to uncertain or unknown future events and conditions (e.g., fires, floods, climate change, changing economic social conditions, and increased in recreation uses).

1.1 Purpose and Need for the Plan

Presidential Proclamation 9232 defines the need for joint Federal agency action to manage BCNM's ROVs:

The Secretary of the Interior and the Secretary of Agriculture (Secretaries) shall manage the monument through the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS), pursuant to their respective applicable legal authorities, to implement the purposes of this proclamation.

The USFS shall manage that portion of the monument within the boundaries of the National Forest System (NFS), and the BLM shall manage the remainder of the monument. The lands administered by the BLM shall be managed as a unit of the National Landscape Conservation System, pursuant to applicable legal authorities, including, as applicable, the provisions of section 603 of the Federal Land Policy and Management Act (43 U.S.C. 1782) governing the management of wilderness study areas.

* * * * *

For purposes of protecting and restoring the objects identified above, the Secretaries shall jointly prepare a management plan for the monument and shall promulgate such regulations for its management as deemed appropriate.

The purpose of the RMP/EIS is to provide strategic direction and guidance for the BLM's and the USFS's allocation of resources and management of the public lands within the BCNM pursuant to the multiple-use and sustained yield mandates of the Federal Land Policy and Management Act (FLPMA) of 1976, the National Forest Management Act of 1976, and Multiple Use Sustained Yield Act of 1960.

The monument's growing popularity, visitation, and economic contribution to Colorado require that the BLM and USFS develop a joint BCNM management framework to:

- Ensure the protection and accurate interpretation of the BCNM ROVs
- Guide shared conservation and stewardship of BCNM
- Provide sustainable and quality river- and upland-based recreation and livestock grazing resource use in the monument

1.2 Description of the Planning Area & Decision Area

The planning area and decision area for this RMP/EIS are comprised of the same geographic area, located along the upper Arkansas River of Chaffee County, Colorado (see Appendix D, Map 2). The BLM and USFS describe the BCNM planning and decision area in detail in the BCNM Planning Assessment (BLM and USFS 2018a:Section 1.3, pp. 7–9). The BCNM planning and decision area consists of only BLM- and USFS-administered lands (Table 1.2-1).

Table 1.2-1. BCNM Planning and Decision Area

Land Management Agency/Unit	Acres
BCNM (Total)	21,604
<i>USFS Lands*</i>	<i>11,811</i>
Lands addressed in the “Pike and San Isabel National Forests Motorized Travel Plan”	11,811
Roadless Areas within BCNM	11,162
Non-Roadless Areas within BCNM	649
<i>BLM Lands*</i>	<i>9,792</i>
Browns Canyon WSA (all included in BCNM)	7,463
AHRA Cooperative Management Lands	529

*Designations within BCNM on USFS and BLM lands, respectively, overlap and do not total.

Table Acronyms: AHRA=Arkansas Headwaters Recreation Area, BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, USFS=U.S. Forest Service, WSA=Wilderness Study Area

1.3 Planning Direction

1.3.1 Congressional and Executive Authorities, Regulations, and Policies

In the development and implementation of the BCNM RMP/EIS, Presidential Proclamation 9232 directs the Secretaries to “maximize opportunities, pursuant to applicable legal authorities, for shared resources, operational efficiency, and cooperation.” Therefore, the BLM and the USFS worked across jurisdictional boundaries in this planning effort, which includes both BLM- and USFS-managed public lands. The RMP complies with both agencies’ planning and management mandates, establishes a comprehensive interagency approach, and provides a mechanism for communication, consultation, and coordination between the two agencies. This joint plan between the BLM and the USFS is structured to meet the planning needs of each agency, specifically the BLM Handbook H-1601-1 and the USFS 2012 Planning Rule.

As allowed by 36 Code of Federal Regulations (CFR) 219.59, the USFS is using the BLM’s administrative review processes. The RMP/EIS will make allocation decisions that follow the direction of the Presidential Proclamation 9232, while complying and remaining consistent with the mandates of FLPMA and the National Forest Management Act. The RMP/EIS will be consistent with the “BLM Manual 6220 – National Monuments, National Conservation Areas, and Similar Designations.” Since the monument includes a Wilderness Study Area (WSA), the BLM will also provide management that is consistent with the “BLM Manual 6330 – Management of Wilderness Study Areas.” For additional Federal, State, and local regulations, laws, policies, plans, and guidance that apply to the development of RMPs and EISs, refer to Appendix E “Laws, Regulations, Policies, and Guidance.”

1.3.2 Planning Criteria

Planning criteria help guide development of the RMP by defining the BLM’s and USFS’s decision space (or the “sideboards”) for the RMP alternatives and land use planning process. Planning criteria are generally based on applicable laws, agency guidance, coordination with cooperating agencies, and consultation with Native American Tribes with due consideration to Tribal concerns, and the results of public and governmental participation (43 CFR 1610.4-2).

The BLM and USFS developed an initial set of criteria and provided them for public review and comment during public scoping in the “Browns Canyon National Monument Management Plan – Environmental Impact Statement Planning Criteria Report” (Planning Criteria Report; BLM and USFS 2019a). The planning criteria developed by BLM and USFS, and modified as a result of scoping, are presented in Table 1.3-1.

Table 1.3-1. Planning Criteria

Planning Criteria	Authority/Source
It is in the public interest to preserve the objects of scientific and historic interest on the lands in and around BCNM.	Presidential Proclamation 9232, Antiquities Act
BLM- and USFS- administered surface lands in the monument will be managed “under the principles of multiple use and sustained yield in accordance with the land use plans except that where a tract of such public land has been dedicated to specific uses according to any other provisions of law it shall be managed in accordance with such law.”	FLPMA; Section 302
The BLM and USFS will manage the boundaries of Federally administered lands in accordance to USFS Manual (FSM) 7152.03, FLPMA, Section 201(b), and 43 United States Code (U.S.C.) §1711(b).	FLPMA, BLM, USFS
The BLM and USFS will “conserve, protect, and restore nationally significant landscapes that have outstanding cultural, ecological, and scientific values for the benefit of current and future generations.	Omnibus Public Land Management Act of 2009; Section 2002
“All Federal lands and interests in lands within the boundaries described in the [Planning Area] are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, leasing, or other disposition under the public land laws or laws applicable to the U.S. Forest Service, including location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument.”	Presidential Proclamation 9232, Antiquities Act
All mineral collection activities, including rock hounding, garnet collection, and gold placering will be managed in accordance with the withdrawal of monument lands in Presidential Proclamation 9232 and any future modification of the withdrawal by Congress.	Presidential Proclamation 9232, 43 CFR 3900
The BLM and USFS will honor valid existing rights (e.g., mineral rights, rights-of-way [ROWS], water rights).	Presidential Proclamation 9232, BLM, USFS
Until a Congressional decision is made regarding designation, the existing Browns Canyon WSA will continue to be managed to prevent impairment and ensure continued suitability for designation as wilderness. Management actions identified within WSAs will conform to wilderness policies.	Wilderness Act, BLM
If any portion of the monument is designated as wilderness by Congress it would be managed according to the Congressional designation and applicable BLM and USFS manuals.	Wilderness Act, BLM, USFS
The BLM and USFS will use current scientific information and results of inventory, monitoring, and coordination to determine appropriate management. The BLM and USFS will strive to incorporate the most current and readily available best scientific information to describe resources and to analyze potential impacts.	BLM, USFS
The BLM and USFS will strive for consistency of management decisions across agency boundaries for lands within the BCNM and for other adjoining public lands.	BLM, USFS
Decisions made in the planning process will only apply to Federal lands.	BLM, USFS
The Wild and Scenic River (WSR) eligibility and suitability determinations from the RGRMP (BLM 2019b; BLM 1996; BLM 1995; see also Appendix I. “Wild and Scenic River Study Report” from BLM 1993) for the Arkansas River will be considered as best available science in this planning effort.	WSR Act, BLM, USFS
Presidential Proclamation 9232 did not affect authorizations for livestock grazing, or administration thereof, on Federal lands within the monument. Livestock grazing within the monument continues to be governed by laws and regulations other than Presidential Proclamation 9232.	Presidential Proclamation 9232, BLM, USFS
Neither the monument designation nor the RMP intend to impose any restriction that could limit or impede wildlife management activities being conducted by CPW. Those wildlife management activities could include, but are not limited, to trapping or capture with the use of aircraft; trailing hounds to capture and radio collar big game; and monitoring of wildlife through the use of aircraft or remote cameras.	Presidential Proclamation 9232, CPW, State of Colorado

Planning Criteria	Authority/Source
The BLM and USFS may authorize ecological restoration and active vegetation management activities in the monument.	BLM, USFS
ROV's goals and objectives are broad and adaptive by intent for reference during future activities or for use in amendments/updates to management direction based on new knowledge and information. The RMP does not prescribe detailed management direction to cover every possible situation.	BLM, USFS
BLM and/or USFS will make future activity- and project-level decisions after referencing RMP goals, objectives, and record of decision, and after additional detailed analysis and further public involvement is conducted, as necessary.	BLM, USFS
BLM and/or USFS will employ proactive cultural inventories and activities that are necessary for protection and interpretation of the scientific, Tribal, and historic objects.	National Historic Preservation Act (NHPA); Section 110
The BLM and USFS will identify cultural resources and tribal values that may be impacted by specific projects, evaluate those resources and values for eligibility for the National Register of Historic Places, and resolve adverse effects to those resources and values before project implementation. Moreover, BLM and USFS will conduct the identification, evaluation, and resolution of effects in consultation with the Colorado State Historic Preservation Office (SHPO), local governments, tribes, and other consulting parties.	54 U.S.C. § 306108, formerly known as Section 106 of the NHPA; Archaeological Resources Protection Act of 1979, Native American Religious Freedom Act, and Executive Order 13007, Sacred Sites
In the event of unanticipated discovery of Native American human remains, the BLM and USFS will follow the procedures outlined in the Native American Graves Protection and Repatriation Act (NAGPRA) and the implementing regulations (43 CFR 10).	NAGPRA
The BLM will promulgate supplementary rules to promote resource protection and protect health and safety through law enforcement of travel and other restrictions in the RMP.	BLM
Consistent with governing laws, regulations, and policy, the BLM will allow electricity bicycle (e-bike) use on all BLM-managed lands where other bicycle and mechanized travel is allowed.	Department of Interior, Secretarial Order 3376; 15 U.S.C. § 2085

Table Acronyms: BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, CPW=Colorado Parks and Wildlife, FLPMA=Federal Land Policy and Management Act, FSM=U.S. Forest Service Manual, NAGPRA=Native American Graves Protection and Repatriation Act, NHPA=National Historic Preservation Act, RGRMP=Royal Gorge Resource Area Resource Management Plan, RMP=resource management plan, ROV=resources, objects, and values, ROW=right-of-way, SHPO=State Historic Preservation Office, U.S.C.=U.S. Code, USFS=U.S. Forest Service, WSA=Wilderness Study Area, WSR=Wild and Scenic River

1.4 Scoping and Planning Issues

The public involvement process for the EIS was developed in accordance with the requirements of NEPA of 1969, as amended (42 United States Code [U.S.C.] 4321-4374); USFS 2012 Planning Rule; and the Council on Environmental Quality regulations implementing the procedural provisions of NEPA (40 CFR Parts 1500–1508). Appendix F includes a detailed description of the public involvement, consultation, and coordination processes completed during the RMP/EIS development. CPW, Chaffee County, Town of Buena Vista, City of Salida, and U.S. Fish and Wildlife Service (USFWS) participated in the process.

1.4.1 Public Scoping

During public scoping, the BLM solicited comments on the planning issues from Federal, State, and local agencies; Native American Tribes; the public; stakeholders; and other interested parties. The Council on Environmental Quality implementation regulations (40 CFR 1500 et seq.) require scoping meetings to be conducted as part of the RMP/EIS. The BCNM RMP public scoping process began on May 14, 2019, with publication of the Notice of Intent in the Federal Register. Public comments received through June 20, 2019 are addressed in this Draft RMP/EIS. Public scoping meetings were held in Salida, Buena Vista, and Denver and via two

online webinars. The public were notified via the BLM and USFS project websites, a joint press release, and media interviews with the Mountain Mail. Information at the public meetings included an overview of the project and public process, highlights of the preliminary range of alternatives, and a public comment mapping tool as described in the “Browns Canyon National Monument Management Plan – Environmental Impact Statement Final Scoping Report” (Scoping Report, BLM and USFS 2019b).

A total of 125 unique comment letters were submitted, including from cooperating agencies, Tribes, various user and environmental groups, and the citizens’ proposal which was co-signed by approximately 105 local business, organizations, communities, and individuals. Once the submissions received during the public scoping process were entered into an online database, the letters were reviewed and parsed into individual comments to be coded according to issue categories. This parsing process resulted in approximately 472 individual comments, which were then coded according to planning issue categories. The majority of comments related to recreation and travel and transportation, followed by special designations (e.g., WSA). A complete summary of the scoping comments is provided in the Scoping Report (BLM and USFS 2019b).

1.4.2 Planning Issues

For planning purposes, planning issues are defined as a matter of controversy or dispute over potential land and resource allocations, levels of resource use, production, and related management practices. An issue may be affected by a proposed action or alternative and can be scientifically analyzed. Unlike the planning direction in Section 1.3 above, an issue has not already been decided by law, regulation, or by a previous decision (BLM H-1790-1). Issues help determine what decisions will be made in the RMP and what the EIS must address, as required by NEPA.

The BLM and USFS interdisciplinary team (IDT) and cooperating agencies developed a set of preliminary planning issues to be addressed in the RMP for public review and to guide the range of alternatives during pre-planning activities. Preliminary planning issues were developed by identifying management concerns and the need for change and management opportunities, which were identified in Chapter 2 of the Planning Assessment (BLM and USFS 2018a:pp. 24–231). The IDT and cooperating agencies refined planning issues during a series of alternatives development workshops in September and October 2018.

The preliminary planning issues were made available during public scoping in the Planning Criteria Report and subsequently refined, removed, or added to in response to internal and public scoping comments (BLM and USFS 2019a). Some planning issues presented in the Planning Criteria Report were removed from analysis because they were determined to be beyond the scope of land management planning decision making, not able to be scientifically analyzed, or not elevated to the importance by internal or external scoping comments. Public scoping also raised issues that will not be addressed in the RMP such as those that are resolved through policy, administrative actions, or that were otherwise outside the scope or physical boundaries of the BCNM RMP/EIS. These issues are discussed more thoroughly in Section 3.3.16 of the Scoping Report (BLM and USFS 2019b) and are not analyzed in this RMP/EIS. Planning issues analyzed in this RMP/EIS are summarized in Table 1.4-1.

Table 1.4-1. Planning Issues Identified

Resource/ Resource Use	Planning Issues
Special Designations (2.3.1; 3.2)	<ul style="list-style-type: none"> Is special management under the Browns Canyon Area of Critical Environmental Concern (ACEC) designation warranted for the recognized relevant and important (R&I) values of the ACEC designation (1996) or does monument establishment (2015) under Presidential Proclamation 9232 and the Browns Canyon WSA provide sufficient protection for R&I values? What management is needed to protect and enhance the eligible and suitable Arkansas River Segment 2 as a candidate WSR under the National Wild and Scenic Rivers System (NWSRS), and which tentative classification of wild, scenic, or recreational should be applied? How should BLM manage the Browns Canyon WSA if released from consideration by Congress? How does USFS manage the Aspen Ridge Roadless Area as part of the monument to maintain its character under the Colorado Roadless Rule?
Cultural Heritage and Tribal Values and Uses (2.3.2; 3.3)	<ul style="list-style-type: none"> How do BLM and USFS minimize degradation of the physical remains of prehistoric and historical resources and how do they seek ways to avoid, minimize, or mitigate any adverse effects on historic properties associated with other resource uses that alter the condition or context of the site? How do BLM and USFS proactively identify cultural resources while promoting scientific, conservation, traditional, and educational values during future management activities?
Geology, Minerals, and Paleontology (2.3.3; 3.4)	<ul style="list-style-type: none"> How do BLM and USFS balance protection of unique geological and geomorphologic features with increasing public visitation and collection? How do BLM and USFS manage activities and risks to public safety with abandoned mines or other geologic hazards? How do BLM and USFS manage noncommercial mineral collection (such as garnet collection) at Ruby Mountain? How do BLM and USFS manage paleontological resources and scientific research to protect ROVs?
Lands with Wilderness Characteristics (2.3.4; 3.6)	<ul style="list-style-type: none"> How will the two units within BCNM lands that were inventoried and found to contain wilderness characteristics, COF-020-044 Ruby Mountain and COF-020-005 Railroad Gulch, be managed?
Vegetation, Wildland Fire Ecology and Fuels (2.3.5; 3.7)	<ul style="list-style-type: none"> What goals, objectives, and management actions, including desired future conditions and land restoration priorities, are necessary to continue progress toward achieving land health standards? Where is special management needed to restore, maintain, or enhance priority vegetation species (including special status species)? What BLM and USFS land use allocations consistent with WSAs are available to address adverse BCNM terrestrial vegetation responses to temperature and drought trends in cottonwood-willow riparian gallery forests, piñon-juniper woodlands, mixed conifer, aspen, park meadows, and more rare plant community types? How do BLM and USFS respond to BCNM wildfire behavior and changing wildfire event risk resulting from current forest die off, insects, disease, and long-term trends in temperature and precipitation? How do BLM and USFS respond to higher probability for human-caused ignitions caused by increasing recreational use in BCNM? How do BLM and USFS manage vegetation class conditions that have departed from historic fire regime conditions, increasing the potential for larger, more severe fires? What role should fire play in the monument and the WSA? What BCNM vegetation treatments are necessary to reduce the impacts associated with fire, insects, non-native/invasive species, and disease? Are the BLM and USFS adaptive management decisions appropriate to respond to BCNM climate-driven drought; long-term soil desiccation; and tree, grass, forb, and other vegetation growth and productivity?
Visual, Scenic Integrity, Night Skies, Natural Soundscapes (2.3.6; 3.8)	<ul style="list-style-type: none"> How can the BCNM's visual resources, natural night skies, quiet, solitude, and natural soundscape be protected to sustain the social landscape and amenity value for public use and enjoyment while also accommodating other permitted land uses?
Watersheds, Soils, and Water	<ul style="list-style-type: none"> What management is needed to prevent resource impacts to areas of especially fragile soils influencing riparian, spring, and riverine systems?

Resource/ Resource Use	Planning Issues
Resources (2.3.7; 3.9)	<ul style="list-style-type: none"> What BLM and USFS management actions are necessary to protect BCNM river corridor, spring, seep, and intermittent stream health from effects of higher temperatures, long-term drought, or concentrated recreational use?
Wildlife and Fish (2.3.8; 3.10)	<ul style="list-style-type: none"> What management is needed to restore, maintain, or enhance priority species (including special status species) and their habitats? How should uses, including recreational use, grazing, motorized, and mechanized vehicle use, etc., be managed to provide for wildlife (including special status species) habitat needs? Where and how will potential increased river and upland recreation use affect wildlife, including sensitive species, and their habitats? How will current and future stressors-drivers, or change agents such as development in Chaffee County, in recreational use and pressure, climate change, invasive species, and wildfire affect monument biological ROVs? How do BLM and USFS adaptively manage for increased BCNM backcountry recreation, increases in habitat disturbance, people-wildlife encounters with bighorn, raptor, or other wildlife during lambing, nesting, winter, or other crucial periods?
Recreation (2.3.9; 3.11)	<ul style="list-style-type: none"> How does the monument accommodate a variety of recreation opportunities from intense river recreation to backcountry settings, taking into consideration quality demand, visitor growth, service level, and recreation setting preferences trade-offs associated with low versus more developed sites? How can the recreation program provide for more dispersed or rugged experiences in a primitive setting? How can the recreation program provide for sustainable wilderness quality and adventure activities, experiences, and outcomes within the monument? How will growing BCNM commercial, individual, and group popularity and recreation conflicts be managed (Special Recreation Permits [SRPs]/Special Use Permits [SUPs], etc.)? How can rapidly increasing visitor use be balanced with protection of ROVs in the monument? Where does the location, nature, and level of recreation use require the need for mitigating resource and social concerns through management zones (MZs), facility development, education, and/or use limitations?
Transportation and Travel Management (2.3.10; 3.12)	<ul style="list-style-type: none"> How do BLM and USFS address new demand for access, ingress, egress, parking, and resource protection in the monument? What are the principal travel priorities in this area for the public, as well as for administrative and resource management activities (e.g., research and monitoring, grazing management, recreational use, or emergency or fire access)? What areas should be designated as open, closed, or limited to off-highway vehicles (OHVs) based on opportunities provided and/or the need to protect resources? How will transportation facilities, including the trail system or any rail-to-trail proposal, prepare for visitor future urban expansion while conserving ROVs? What linkages could be developed to potentially connect trails in the monument to urban and riverfront trail systems? What areas should be designated for mechanized use including for mountain bikes and e-bikes?
Range and Livestock Grazing (2.3.11; 3.13)	<ul style="list-style-type: none"> What management strategies are needed to balance livestock use and fish and wildlife (including special status species) habitat needs? Given increases in recreation on public lands in Chaffee County, how will potential conflicts between recreation and livestock be addressed? What opportunities exist for educating the public to improve general understanding of livestock grazing management?
Lands and Realty (2.3.12; 3.14)	<ul style="list-style-type: none"> How will new demand for commercial filming and unmanned aerial vehicle systems be managed? What decisions regarding ROWs, land use authorizations, withdrawals, and classifications need to be revised?

Table Acronyms: ACEC=Area of Critical Environmental Concern, BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, MZ=management zones, NWSRS=National Wild and Scenic Rivers System, OHV=off-highway vehicle, R&I=relevant and important, ROV=resources, objects, and values, ROW=right-of-way, SRP=Special Recreation Permit, SUP=Special Use Permit, USFS=U.S. Forest Service, WSA=Wilderness Study Area, WSR=Wild and Scenic River

1.5 Consistency with Other Related Plans

BLM and USFS management plans must be consistent with officially approved or adopted land use or resource-related plans of other Federal, State, and local agencies, and Tribal governments, to the extent that those plans are consistent with Federal laws and regulations applicable to BLM- and USFS-administered public lands. Such plans are being considered during development of this RMP/EIS, examples of which are given in the Planning Assessment (BLM and USFS 2018a). The BLM and USFS are not currently aware of any inconsistencies or conflicts between the alternatives considered in this EIS and local land-use plans.

2.0 ALTERNATIVES

This chapter presents the three alternatives considered in detail to meet the purpose and need of the BCNM RMP, along with the goals/desired future condition and objectives of each resource and resource use. Alternatives dismissed from detailed study are also described.

2.1 Alternatives Development Overview

In the development of the range of alternatives, the BLM and the USFS considered public input, cooperating agency input, existing management direction, and the need to analyze a range of reasonable alternatives (40 CFR 1505.1[e]). Prior to scoping, the Planning Assessment identified opportunities to improve management and the need for changing other existing decisions by resource and resource use (BLM and USFS 2018a:Chapter 2 [refer to the conclusion section within each resource section]).

The BLM and USFS decision space is constrained by management direction provided in Presidential Proclamation 9232, the geographic boundary of the decision area, and by legal requirements for management of the Browns Canyon WSA and USFS Roadless Area. Each alternative was developed to be consistent with Presidential Proclamation 9232 and existing laws and regulations, address the purpose and need, and respond to issues identified during the public scoping process. Additionally, the identified planning criteria established strong sideboards that directed the range of alternatives. Refer to Section 1.3.1 “Congressional and Executive Authorities, Regulations, and Policies” above for a detailed description of the management “sideboards” that helped frame the range of alternatives.

The BLM and USFS IDT convened with the cooperating agencies to develop preliminary planning criteria and a range of alternatives. These preliminary planning criteria and alternatives were presented in the Planning Criteria Report during public scoping and subsequently refined (BLM and USFS 2019a). After public scoping, the BLM and USFS IDT and cooperating agencies gathered to review scoping comments and refine and revise preliminary alternatives. The BLM and USFS revised both alternatives B and C to address monument issues identified and reported in the Scoping Report, maintaining a reasonable alternatives range. Viable and substantive management alternatives identified by the public, including the citizen's proposal for alternative management zone (MZ) framing (BLM and USFS 2019b; comment letter 80), were incorporated or retained and clarified when already reflected in alternatives B or C.

It is the goal of the RMP to develop objectives, administrative designations, allocations for allowable resource uses, and management actions. These are planning decisions that identify what types of uses or actions the BLM and USFS must allow or restrict in the various portions of the planning area at the comprehensive, program-level scale. Allocations identify whether or not BLM and/or USFS-administered lands would be available for various uses or potential uses. Management actions identify what and where future actions may or may not be allowed and what restrictions or requirements may be placed on those future actions to achieve the objectives.

The BCNM Planning Assessment, per the USFS 2012 Planning Rule, identified ecosystem stressors and drivers based on the Best Available Scientific Information (BASI). Identified stressors and drivers were used to determine BCNM plan standards and guidelines (management actions) that ensure ecological integrity. The management actions ensure the BCNM provides for clean air and fresh water, energy, fuel, storage, fiber, and minerals. It regulates long-term carbon

storage, climate, and water filtration, purification, and storage. The planning area components support seed dispersal, soil formation, and nutrient cycling. They also provide for cultural services such as education, spiritual, and cultural heritage and recreational experiences and tourism opportunities.

BLM and USFS land use and forest planning follows a “tiered” approach, in which RMPs serve as the top-level programmatic guidance that are focused on landscape-level goals and objectives and land use allocations. Specific implementation actions usually require additional information and a more detailed impact analysis before they can be approved. As such, the RMP presents a vision or desired condition for the area and provides a blueprint for protecting the resources and objects of value managed by the BLM and USFS.

Many of the comments received during scoping address implementation-level activities or actions that do not need RMP decisions to implement, such as inventorying, monitoring, agreements, and standards. While specific recommendations on implementation decisions may not be addressed directly in the RMP/EIS, comments will be utilized to inform the RMP’s allocation and management decisions, as well as future implementation decisions. Similarly, comments were received on gateway areas just outside of the monument boundary (e.g., Aspen Ridge Road). Refer to Section 2.4 below for direction on the recreation management of BCNM gateway lands.

2.2 Summary of Alternatives

The alternatives represent a range of reasonable management approaches that the BLM and USFS could implement to meet the purpose and need for the BCNM RMP. The alternatives incorporate management actions and allocations to achieve the goals and objectives for monument ROVs, as characterized and/or clarified in the Planning Assessment (BLM and USFS 2018a) and through public scoping (BLM and USFS 2019b).

Each program area addressed below includes:

- Goals (BLM)/ desired conditions (USFS) common to all alternatives: a broad statement of desired outcomes addressing resource, environmental, social, or economic characteristics within the planning area, or a portion of the planning area, toward which management of resources should be directed.
- Objectives common to all alternatives: a concise statement of desired resource conditions within the planning area, or a portion of the planning area.
- Allowable uses and management actions (BLM)/ standards (USFS) by alternative: allocated areas for specific types of use and/or measures that will be applied to planning activities to achieve management objectives for resources.

Allowable uses and management actions/standards would not change existing rights or authorizations (e.g., terms and conditions of existing rights-of-way [ROWs]). The agencies could apply mitigation measures prior to granting authorization for the exercise of valid existing rights, where consistent with applicable laws, regulations, and terms of the lease, contract, or grant.

The BLM and USFS grouped the allowable uses and management action decisions into three alternatives; these alternatives are summarized below and presented in detail beginning with Section 2.3.1 below. Recreation is the primary human use of the monument, and variations in

management of recreation are therefore a driving factor in the development of a reasonable range of management alternatives.

- Alternative A (Current Management/No Action): Continues existing management in the Planning Area, including management direction from Presidential Proclamation 9232. In general, current management reflects decisions in the RGRMP (BLM 1996) and “Pike and San Isabel National Forests; Cimarron and Comanche National Grasslands Land and Resource Management Plan” (USFS 1984), as amended. In addition, Alternative A reflects management direction in Presidential Proclamation 9232, which imposes restrictions to resource uses and protections for ROVs. Although this alternative would not meet the purpose and need for the BCNM RMP, it is included to allow for comparison of existing management with the action alternatives.
- Alternative B: Focuses on protecting monument ROVs (e.g., cultural resources, wildlife, vegetation, soil/water, river adventure, wilderness hiking, Tribal use, livestock grazing use, quiet-solitude-naturalness use) while providing primarily non-motorized recreation activities, such as hiking and boating. Alternative B emphasizes a predominantly primitive and backcountry management framework, generally consistent with the citizens’ proposal. Specifically, Alternative B limits future recreational infrastructure development to a narrower geographic extent and allows for more restriction on recreational activities than Alternative C, while still allowing varied river-based and upland outdoor recreation experiences and outcomes.
- Alternative C: Focuses on protecting monument ROVs while providing a wider variety of river and upland recreation opportunities in primitive, backcountry, middle, and front country settings to enhance the local economy and quality of life for residents and visitors. Alternative C emphasizes more management of natural resources to address stressors and drivers and a wider range of recreation opportunities and access more than management under Alternative B.

The Draft RMP/EIS preferred alternative identified by BLM and USFS is Alternative C. This preference is based on the following criteria:

1. Best responds to the purpose and need and resolve planning issues;
2. Meets the restoration and protection requirements under Presidential Proclamation 9232;
3. Meets other identified statutory requirements;
4. Represents the best combination of decisions to achieve the BLM’s and USFS’s goals and objectives;
5. Satisfactorily addresses and mitigates adverse impacts; and
6. Incorporates Cooperating Agency input on selection including:
 - a) Protects monument ROVs,
 - b) Incorporates adaptive management and federal agency professional judgment,
 - c) Allows for proactive vegetation management to protect monument resources (i.e., big horn sheep habitat), and
 - d) Provides a broad range of recreational opportunities for the public.

In developing the Proposed RMP/Final EIS, which is the next phase of the planning process, the decision maker may select various management decisions from each of the alternatives analyzed in the Draft RMP/EIS for the purpose of creating a management strategy that best meets the

needs of the resources and values in this area under the BLM and USFS multiple use and sustained yield mandate.

2.3 Detailed Description of Alternatives

Tables 2.3-1 through 2.3-12 describe the details of the alternatives by resource and resource use. Each table begins with the goals/desired condition and objectives for that program. Where applicable, the table is then organized by three categories; management actions/standards common to all alternatives, management actions/standards common to all action alternatives, and management actions/standards and administrative designations and allocations for allowable resource use/management areas by alternative. Each management action/standard is identified by a record number (“Record #”) in the first column. The second column includes a numbered list of objectives (“OBJ”) that support that alternative. The third (“BLM”) and fourth (“USFS”) columns include an “X” if the alternative applies to land administered by BLM, USFS, or both.

2.3.1 Special Designations

Table 2.3-1. Alternative Details for Special Designations

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
N/A	N/A	X	X	Goal/Desired Condition SD1. Sustain and protect outstandingly remarkable values of the BCNM to maintain the long-term sustainability of the area’s special characteristics and values for which the area was originally designated or considered for designation. <u>Objectives:</u> SD1.1 <i>Browns Canyon National Monument</i> – Manage the BCNM consistent with Presidential Proclamation 9232 in a manner that does not impair the protections of ROVs. SD1.2 <i>Browns Canyon WSA</i> – Manage the Browns Canyon WSA in a manner that does not impair the suitability for designation of wilderness. SD1.3 <i>Aspen Ridge Roadless Area</i> – Manage the roadless area to protect sources of drinking water, important fish and wildlife habitat, and semi-primitive or primitive recreation areas that include both motorized and non-motorized recreation opportunities, and naturally appearing landscapes while accommodating State-specific situations and concerns in Colorado’s roadless areas. SD1.4 <i>Browns Canyon ACEC</i> – Protect and prevent irreparable damage to the important and relevant fauna, scenic, and cultural values for which the ACEC was originally designated in 1995. SD1.5 <i>WSRs</i> – Protect eligible and suitable river and tributary stream segments within the BCNM for the NWSRS consistent with law and in accordance with the WSR Act and BLM guidance (BLM Manual 6400). In addition, maintain the free-flowing condition, water quality, and outstandingly remarkable values associated with suitable segments in a comprehensive administrative plan and/or strategy.		
MANAGEMENT ACTIONS/STANDARDS COMMON TO ALL ACTION ALTERNATIVES						
100 (BCNM)	SD1.1 SD1.2 SD1.3 SD1.4 SD1.5	X	X	No Similar Action.	Develop implementation-level plans and strategies to clarify management of all ROVs, goals, objectives, standards, and management actions described in the BCNM RMP/EIS and ROD.	
101 (Aspen Ridge Roadless Area)	SD1.3		X	Manage the Aspen Ridge Roadless Area (11,185 acres) per the 2012 Colorado Roadless Rule.	Same as Alternative A.	

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
102 (Browns Canyon WSA)	SD1.2	X		WSAs released by Congress from consideration for wilderness designation will be subject to other multiple-use management, as prescribed in other management actions including those listed under Sections 2.3.4 “Lands with Wilderness Characteristics,” 2.3.5 “Vegetation, Wildland Fire Ecology and Fuels,” 2.3.6 “Visual Resources, Night Skies, and Natural Soundscapes,” and 2.3.9 “Recreation.” Desired plant communities will be determined for WSAs returned to other types of multiple-use management.	<p>If the Browns Canyon WSA is released from wilderness consideration, manage the lands for the following resource values where present: cultural and visual resources, primitive settings (Monument – River East), and primitive to front country settings (Arkansas River Shore and Passage), and un-fragmented wildlife habitat. Apply the following management:</p> <ul style="list-style-type: none"> • Issue no SRPs for competitive events. • Close to motorized and mechanized travel, including over-snow motorized travel. • Close to wood product sales and/or harvest (including Christmas tree harvest). • Manage as a ROW exclusion area. • Close to non-energy leasable mineral exploration and/or development • Manage as Visual Resource Management (VRM) Class I. <p>(See also Sections 2.3.4 “Lands with Wilderness Characteristics,” 2.3.5 “Vegetation, Wildland Fire Ecology and Fuels,” 2.3.6 “Visual Resources, Night Skies, and Natural Soundscapes,” and 2.3.9 “Recreation”)</p>	<p>If the Browns Canyon WSA is released from wilderness consideration, manage the lands consistent with the surrounding lands in the monument to protect for monument ROVs, primitive to backcountry settings (Monument – River East), and primitive to front country settings (Arkansas River Shore and Bench). Apply the following management:</p> <ul style="list-style-type: none"> • Issue SRPs for competitive events. • Close to motorized and mechanized travel, including over-snow motorized travel. • Close to wood product sales and/or harvest (including Christmas tree harvest). • Manage as a ROW exclusion area. • Close to non-energy leasable mineral exploration and/or development • Manage as VRM Class II. <p>(See also Sections 2.3.4 “Lands with Wilderness Characteristics,” 2.3.5 “Vegetation, Wildland Fire Ecology and Fuels,” 2.3.6 “Visual Resources, Night Skies, and Natural Soundscapes,” and 2.3.9 “Recreation”)</p>

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
MANAGEMENT ACTIONS/STANDARDS AND ADMINISTRATIVE DESIGNATIONS AND ALLOCATIONS FOR ALLOWABLE RESOURCE USE /MANAGEMENT AREAS BY ALTERNATIVE						
103 (WSRs)	SD1.5	X	X	<p>Recommend to Congress that the Arkansas River corridor from Leadville to Pueblo Reservoir be designated and managed as an NRA to include the following:</p> <ul style="list-style-type: none"> Revocation of existing waterpower/reservoir withdrawals Initiation of protective withdrawals on the corridor <p>(Note: management action was not implemented. See Section 2.3.7 “Watersheds, Soils, and Water Resources” below for management).</p>	<p>Determine the following eligible segment as suitable for designation, and apply interim protective management:</p> <ul style="list-style-type: none"> Arkansas River Segment 2 within the BCNM (7.1 miles) – recreational classification – recreation, scenery, wildlife, botany, fish, and cultural outstandingly remarkable values. <p>(See Section 2.3.7 “Watersheds, Soils, and Water Resources” below for management).</p>	<p>Determine the following eligible segment as not suitable for designation, and manage consistent with the uses, ROVs identified, and valid existing water rights of any party as described in Presidential Proclamation 9232:</p> <ul style="list-style-type: none"> Arkansas River Segment 2 within the BCNM (7.1 miles) – recreational classification – recreation, scenery, wildlife, botany, fish, and cultural outstandingly remarkable values. <p>(See Section 2.3.7 “Watersheds, Soils, and Water Resources” below for management).</p>
104 (Browns Canyon ACEC)	SD1.4	X		Maintain the Browns Canyon ACEC (9,755 acres) and manage it to protect and enhance its relevant and important (R&I) special values as described in the BLM RGRMP 1996 ROD and the ACEC report (Appendix D, Map 3).	Same as Alternative A.	No ACEC designation in BCNM.

Table Acronyms: ACEC=Area of Critical Environmental Concern, BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, EIS=Environmental Impact Statement, N/A=not applicable, NWSRS=National Wild and Scenic River System, OBJ=objective, R&I=relevant and important, RGRMP=Royal Gorge Resource Management Plan, RMP=resource management plan, ROD=Record of Decision, ROV=resources, objects, and values, ROW=right-of-way, SRP=Special Recreation Permit, USFS=U.S. Forest Service, WSA=Wilderness Study Area, WSR=Wild and Scenic River

2.3.2 Cultural Heritage and Tribal Values and Uses

NOTE: All Federal undertakings are subject to compliance with 54 U.S.C. §306108, the provision formerly codified as Section 106 of the National Historic Preservation Act (NHPA), requires identification of historic properties (cultural resources that are potentially eligible for the National Register of Historic Places [NRHP]), evaluation of eligibility for the NRHP, resolution of any adverse effects

to historic properties, and consultation with the Colorado State Historic Preservation Office (SHPO), Native American Tribes, local governments, and other consulting parties. Compliance with Federal laws is required regardless of alternative. The management discussed in this plan applies to known historic properties that are managed pursuant to Section 110 of the NHPA.

Table 2.3-2. Alternative Details for Cultural Heritage and Tribal Values and Uses

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
N/A	N/A	X	X	Goal/Desired Condition CR1. Apply proper care and maintenance of BCNM cultural resources, ensuring that they are available for appropriate uses by present and future generations through identification, preservation, and protection. <u>Objectives:</u> CR1.1 Partnership – Cooperate and identify opportunities with Tribal, university, support program, or other partners for protection, maintenance, stewardship, educational use, or experimental use of appropriate cultural resources that may lead to better protection and conservation. CR1.2 Research Projects – Allow for opportunities that provide for scientific research related to cultural resources, incorporating site documentation, monitoring and stabilization, and enhancement. CR1.3 Public Education Events – Provide opportunities for public education and interpretation of cultural resources.		
N/A	N/A	X	X	Goal/Desired Condition CR2. Reduce imminent threats and resolve potential conflicts from natural or human-caused deterioration, or potential conflict with other resource uses. <u>Objectives:</u> CR2.1 Protections Issues – Perform protective activities, such as identifying and signing, for important sites and areas. CR2.2 Avoidance – Seek to avoid disturbing significant cultural resources, and protect, stabilize, enhance, and restore important and at-risk cultural resources. CR2.3 Long-term conservation – Provide for the long-term conservation of significant cultural resources.		
N/A	N/A	X	X	Goal/Desired Condition CR3. Recognize Tribal interests in BCNM and work with Tribes to support Tribal uses of public lands, as appropriate. <u>Objectives:</u> CR3.1 Tribal Relationships – Develop and maintain working relationships with Tribes that have an interest in the area. CR3.2 Tribal Uses – Provide opportunities for traditional (Native American) uses of cultural resources, sacred sites, landscapes, native plants, and other natural resources.		

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
MANAGEMENT ACTIONS/STANDARDS COMMON TO ALL ALTERNATIVES						
201 (Public Education and Outreach)	CR1.3 CR3.1 CR3.2	X	X	In collaboration with Tribes, develop interpretive, educational, and outreach programs, as appropriate and desired by Tribes to prevent damage to cultural heritage and archaeological resources through education and interpretation.		
202 (Long-term Conservation)	CR2.3	X	X	In collaboration with Tribes and other partners, identify and provide opportunities for long-term conservation of significant cultural resources and cultural landscapes, including but not limited to, physical and administrative protection, inventory, monitoring, research, stabilization, restoration, and repair.		
203 (Traditional Use)	CR3.1 CR3.2	X	X	Allow members of Indian Tribes noncommercial collection and use of natural resources necessary for traditional, religious, or ceremonial purposes, consistent with Presidential Proclamation 9232.		
MANAGEMENT ACTIONS/STANDARDS COMMON TO ALL ACTION ALTERNATIVES						
204 (Interpretive Sites)	CR1.3 CR3.1 CR3.2	X	X	No similar action.	Develop interpretive sites in line with the MZs (see Section 2.3.9 “Recreation” below) to attract visitors and satisfy their desire to experience the history and prehistory of the area. Allow educational programs within designated trail systems.	
MANAGEMENT ACTIONS/STANDARDS AND ADMINISTRATIVE DESIGNATIONS AND ALLOCATIONS FOR ALLOWABLE RESOURCE USE /MANAGEMENT AREAS BY ALTERNATIVE						
205 (Programs)	CR1.1 CR1.2 CR2.1 CR2.2 CR3.1 CR3.2	X	X	No similar action.	Establish collaborative programs with Native American communities, SHPO, academic institutions, and qualified organizations to identify, inventory, document, monitor, and develop and implement best management practices (BMPs) for the restoration, stabilization, protection, and/or interpretation of historic and prehistoric resources.	No similar action.

Table Acronyms: BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, BMP=best management practice, MZ=management zone, N/A=not applicable, OBJ=objective, SHPO=State Historic Preservation Office, USFS=U.S. Forest Service

2.3.3 Geology, Minerals, and Paleontology

Table 2.3-3. Alternative Details for Geology Minerals, and Paleontology

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
N/A	N/A	X	X	Goal/Desired Condition GM1. Manage and protect paleontological and geologic resources consistent with the intent of Presidential Proclamation 9232 as it relates to the withdrawal of monument lands, promote resource access, promote scientific and educational use, and facilitate public understanding and appropriate use. <u>Objectives:</u> GM1.1 <i>Damage Prevention</i> – Manage monument uses to prevent damage to unique geological features, geomorphologic features, and paleontological resources. This also applies to materials from public lands located in museum collections. GM1.2 <i>Public Education</i> – Use opportunities for education and interpretation to expand public knowledge and appreciation of BCNM geologic resources, as well as safety. GM1.3 <i>Research</i> – Facilitate appropriate academic research, management studies, and citizen science to improve understanding and protections of geologic and paleontological resources. GM1.4 <i>Fossil Collection</i> – Use public awareness programs to reduce the risk of unauthorized fossil collection in BCNM. GM1.5 <i>Geological Hazards</i> – Manage geological hazards and public safety, including abandoned mines.		
N/A	N/A	X	X	Goal/Desired Condition GM2. Allow flexibility for potential U.S. Congressional action authorizing collection of monument minerals or materials. <u>Objectives:</u> GM2.1 <i>Access Trails</i> – Manage access to prevent resource damage and reduce recreational user conflicts. GM2.2 <i>Shoreline</i> – Manage river access to prevent resource damage and reduce recreational user conflicts.		
MANAGEMENT ACTIONS/STANDARDS COMMON TO ALL ACTION ALTERNATIVES						
206 (Resource Protection)	GM1.1 GM1.2 GM1.3 GM1.4	X	X	No similar action	To protect sensitive geologic and paleontological features and landforms, prioritize allowing access with engineering and educational avenues, such as elevated walkways and interpretive signage, over limiting access. Work with all monument users to prevent damage to sensitive geologic and paleontological features.	
207 (Rock Climbing)	GM1.2 GM1.3	X	X	No similar action.	Allow climbing routes to be established through SRPs. If monitoring indicates impacts to sensitive geologic features, apply adaptive management including partnering with the rock-climbing community to prevent damage.	

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
208 (Mine Hazards)	GM1.2	X	X	No similar action. <i>Note: Mine hazard mitigation and effects are assessed on a case-by-case basis.</i>	Apply mine and abandoned mine hazard mitigation in a manner that protects resource values of the area, including wilderness characteristics; wildlife habitat; cultural site integrity; scenic values; natural, botanical, and geologic resources; and existing designated facilities in a way that protects public safety while employing minimal resources.	
209 (Noncommercial Collection)	GM1.1	X	X	Prohibit collection of monument resources and objects, in accordance with Presidential Proclamation 9232.	Prohibit collection of monument resources and objects, such as garnets, gold, rocks, fossils, and other minerals collected through rock hounding and gold placering, in accordance with Presidential Proclamation 9232, unless otherwise specified by Congress.	
MANAGEMENT ACTIONS/STANDARDS AND ADMINISTRATIVE DESIGNATIONS AND ALLOCATIONS FOR ALLOWABLE RESOURCE USE /MANAGEMENT AREAS BY ALTERNATIVE						
210 (Mineral Collection)	GM1.1 GM1.3 GM2.1	X	X	Prohibit collection of monument resources and objects, in accordance with Presidential Proclamation 9232.	Same as Alternative A, with the following exception: If Congress enacts legislation authorizing collection of minerals: <ul style="list-style-type: none"> Promulgate regulations governing noncommercial collection activities, consistent with the Congressional directive. Allow mineral collection within the monument at specific dates and locations. 	Same as Alternative A, with the following exception: If Congress enacts legislation authorizing collection of minerals: <ul style="list-style-type: none"> Promulgate regulations governing noncommercial collection activities, consistent with the Congressional directive. Allow mineral collection within the monument.

Table Acronyms: BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, N/A=not applicable, OBJ=objective, SRP=Special Recreation Permit, USFS=U.S. Forest Service

2.3.4 Lands with Wilderness Characteristics

Table 2.3-4. Alternative Details for Lands with Wilderness Characteristics

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
N/A	N/A	X		Goal/Desired Condition LWC1. Balance the management of inventoried units of lands with wilderness characteristics within the BCNM with other uses and resource values. Objectives: LWC1.1 Monument ROVs – Manage the units found to have wilderness characteristics to be consistent with the uses and ROVs identified in the Presidential Proclamation 9232.		
MANAGEMENT ACTIONS/STANDARDS AND ADMINISTRATIVE DESIGNATIONS AND ALLOCATIONS FOR ALLOWABLE RESOURCE USE /MANAGEMENT AREAS BY ALTERNATIVE						
211 (Management Action: Areas Managed to Protect Wilderness Characteristics)	LWC1.1	X		No similar action.	Protect wilderness characteristics in areas inventoried and found to possess wilderness characteristics (Appendix D, Map 4): <ul style="list-style-type: none">Railroad Gulch (537 acres within BCNM).Browns Canyon North-Ruby Mountain (88 acres within BCNM).	Do not manage lands that were inventoried and found to contain wilderness characteristics separately from other monument management.
212 (Allowable Use: Vegetation Management)	LWC1.1	X		No similar action.	Protect wilderness characteristics by designing fuels and vegetation treatments so they will not impact wilderness character values beyond 5 years (See Section 2.3.5 “Vegetation Management” below for management).	No similar action (see Section 2.3.5 “Vegetation” below for management).
213 (Allowable Use: Fire Management)	LWC1.1	X		No similar action.	Use minimum impact suppression tactics in response to wildfire to limit impacts on wilderness characteristics to the greatest extent possible.	No similar action (see Section 2.3.5 “Vegetation” below for management).

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
214 (Allowable Use: SRPs/SUPs)	LWC1.1	X		No similar action.	Within lands with wilderness characteristic areas: <ul style="list-style-type: none"> • Issue SRPs/SUPs only if the authorization will maintain or improve the wilderness characteristics. • Do not allow competitive events. • Review current outfitting and guiding levels of use and adjust, as needed, to maintain lands with wilderness characteristic values. • Signage would be limited and of a primitive character consistent with lands with wilderness characteristic values. 	No similar action (see Section 2.3.9 “Recreation” below for management).

Table Acronyms: BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, N/A=not applicable, OBJ=objective, ROV=resources, objects, and values, SRP=Special Recreation Permit, SUP=Special Use Permit, USFS=U.S. Forest Service

2.3.5 Vegetation, Wildland Fire Ecology, and Fuels

Table 2.3-5. Alternative Details for Vegetation, Wildland Fire Ecology, and Fuels

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
N/A	N/A	X	X	<p>Goal/Desired Condition VF1. A mosaic of native forest, woodland, shrub, and grassland terrestrial vegetation and special status plant species are present, improving, and sustaining within the ecological thresholds compliant with the natural range of variability (NRV) across the monument landscape. Species diversity, grassland, shrub woodland and forest canopy, density, age class, and other cover measures exist within ecological site potential. Ecological processes and functions within diverse vegetation communities exist; are protected, enhanced, and/or restored; and are providing ecosystem services.</p> <p><u>Objectives:</u></p> <p>VF1.1 Vegetation Communities – Maintain and restore variability in age classes of Aspen forest stands, Ponderosa Pine-mixed conifer forest, and piñon-juniper woodland communities to the NRV.</p>		

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
				<p>VF1.2 <i>Special Status Plant Species</i> –Protect and maintain special status plant species. Use policy under the ESA, various recovery plans, and the BLM Manual 6840 and FSM 2670 to proactively protect listed plant species and their habitats.</p> <p>VF1.3 <i>Riparian – Wetland Vegetation</i> – Enhance, restore, and encourage natural expansion of BCNM cottonwood-willow gallery forest communities and upland riparian-wetland vegetation.</p> <p>VF1.4 <i>Grass/forb Upland Communities</i> – Maintain or restore herbaceous vegetation communities to the NRV.</p>		
N/A	N/A	X	X	<p>Goal/Desired Condition VF2. Drought, climate (temperature, precipitation, extreme weather events), insects, infestations, and other stressors or disturbance driving forest die-off and affecting BCNM terrestrial vegetation are monitored, understood, managed, and mitigated, as possible (see VF.1).</p> <p>Objectives:</p> <p>VF2.1 <i>Drought</i> – Protect soil, water, and vegetation resources during drought.</p> <p>VF2.2 <i>Noxious weeds and Other Invasive Species</i> – Monitor their presence, prevent new infestations, and reduce the acreage of existing infestations of noxious weeds and other invasive species.</p>		
N/A	N/A	X	X	<p>Goal/Desired Condition VF3. USFS and BLM jointly protect life, property, and resource values through management to address higher probability for human-caused ignitions and respond to BCNM wildfires based on ecological, social, and legal consequences of the fire and the circumstances under which it occurs.</p> <p>Objectives:</p> <p>VF3.1 <i>Wildfire</i> – Use wildfire to protect, maintain, and enhance resources and, when possible, allow wildfire to function in its natural ecological role.</p> <p>VF3.2 <i>Treatments</i> – Reduce hazardous fuels using prescribed burns or biological or mechanical treatments to restore ecosystems; protect human, natural, and cultural resources; and reduce the threat of wildfire to communities. Design treatments to protect monument resources and values.</p> <p>VF3.3 <i>Fire Response</i> – Maximize the effectiveness of fire response in consideration of protecting human health and safety and ROVs, and in consideration of allowing wildfire to function as a driver towards establishing or maintaining fuel conditions within the NRV.</p> <p>VF3.4 <i>Emergency Efforts</i> – Allow emergency stabilization, rehabilitation, and restoration efforts to protect and sustain resources, public health and safety, and community infrastructure.</p>		

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
MANAGEMENT ACTIONS/STANDARDS COMMON TO ALL ALTERNATIVES						
215 (Land Health Standards)	VF1.1 VF1.2 VF1.3 VF1.4 VF2.1	X		Maintain or improve resource conditions as measured by the “Colorado Public Land Health Standards” (BLM 1997).		
216 (Noxious and Invasive Species)	VF1.4 VF2.1 VF2.2 VF3.1	X	X	Manage noxious weeds and other invasive species according to the principles of integrated pest management and the Colorado Undesirable Plant Act. Use BMPs to prevent the introduction and spread of Colorado List A and B noxious weeds and other invasive plants.		
MANAGEMENT ACTIONS/STANDARDS COMMON TO ACTION ALTERNATIVES						
Vegetation						
217 (Collection)	VF1.1	X	X	No similar action.	Allow commercial collection of seed and vegetative materials by permit on a case-by-case basis.	
MANAGEMENT ACTIONS/STANDARDS AND ADMINISTRATIVE DESIGNATIONS AND ALLOCATIONS FOR ALLOWABLE RESOURCE USE /MANAGEMENT AREAS BY ALTERNATIVE						
Terrestrial Vegetation, Sensitive Species (Plants), Riparian, and Wetland Resources						
218 (Restoration)	VF1.1 VF1.3 VF1.4 VF2.1	X	X	No similar action.	Prohibit use of non-native or noxious plants and seeds for restoration and nonstructural range improvements. Require seed laboratory analysis for each seed lot for purity, noxious weeds, and noxious weed seeds. Select seeds and plants based on Natural Resources Conservation Service (NRCS) ecological site descriptions or other USFS current accepted standard.	Prohibit use of noxious plants and seeds for restoration and nonstructural range improvements. Require seed laboratory analysis for each seed lot for purity, noxious weeds, and noxious weed seeds. Select seeds and plants based on NRCS ecological site descriptions or other USFS current accepted standard.

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
219 (Chemical Control of Noxious and Invasive Species)	VF1.4 VF2.1 VF2.2 VF3.1	X	X	No similar action.	Do not allow general broadcast, including aerial broadcast, of chemical control agents (i.e., broadcast that does not target application to specific plants).	Allow general broadcast of chemical control agencies, including from ground equipment (e.g., OHVs) and aircraft.
220 (Special Status Plant Species)	VF1.2 VF2.1	X	X	No similar action.	Do not allow new trails within 300 feet of sensitive plant species in “Colorado Natural Heritage Program Potential Conservation Areas,” critical habitat for endangered plant species, and important habitat for special status plant species that are in or near an advanced seral stage.	Do not allow new trails within occupied suitable habitat for special status plant species.
221 (Vegetation Treatments)	VF1.4 VF3.2 VF3.4	X	X	BLM: Manage vegetation to meet desired plant condition and riparian and wildlife objectives, and to improve forage condition via integrated activity plans. USFS: Continue to treat vegetation per USFS Management Area Prescriptions for 2B, 4B, 4D, 5B, and 6B (Appendix D, Map 5).	Do not allow mechanical terrestrial vegetation treatments. Allow for non-mechanical (e.g., hand-thinning) vegetation treatments and targeted chemical and biological treatments (including targeted grazing and adaptive management strategies) to meet desired plant condition; improve vegetation structure, diversity, and resiliency; reduce noxious and invasive species; and restore native plant communities.	Allow mechanical, chemical, and biological treatments (including targeted grazing and adaptive management strategies) to meet desired plant condition; improve vegetation structure, diversity, and resiliency; reduce noxious and invasive species; restore native plant communities; and maintain or improve forage availability. Allow vegetation treatments in the WSA if treatment meets the non-impairment standard.
Wildland Fire Ecology and Fuels						
222 (Fuels and Vegetation Treatments)	VF1.1 VF3.1 VF3.2 VF3.3 VF3.4	X	X	BLM: Manage vegetation to meet desired plant condition and riparian and wildlife objectives, and to improve forage condition via integrated activity plans. USFS: Manage vegetation to meet fire protection objectives using prescribed fire to accomplish resource	Do not allow terrestrial vegetation treatments unless necessary for the protection of life or property. When vegetation treatments are required: <ul style="list-style-type: none"> Only use non-mechanical vegetation treatment methods. 	Allow wildfire, prescribed burning (broadcast and/or pile), hand thinning, biological, chemical, and mechanical vegetation treatments in terrestrial vegetation communities to improve vegetation structure, diversity, and resiliency; to reduce noxious and invasive species; to restore native

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
				management objectives (e.g., reducing fuels, improving wildlife habitat), while limiting its potential impacts to riparian areas. Use unplanned ignitions on areas identified to achieve management objectives.	<ul style="list-style-type: none"> Mimic natural processes to the maximum degree possible. Design treatments to address underlying or problematic causes identified in rangeland health assessments. 	plant communities; and to maintain or improve forage availability. Allow vegetation treatments in the WSA if treatment meets the non-impairment standard.
223 (Wildfire and Prescribed Fire)	VF1.1 VF3.1 VF3.2 VF3.3	X	X	<p>BLM: Allow prescribed fire and unplanned natural ignitions to be used as management tools to enhance resources.</p> <p>USFS: Prescribed fire will be utilized as a vegetative fuels management technique where it is the most cost efficient and acceptable alternative to achieve management objectives.</p>	Prioritize and use natural ignitions and natural processes to manage fuel loads. Do not allow prescribed fire.	Prioritize reductions in fuel load using the full suite of available techniques. Consider other resource restrictions when allowing use of mechanical, biological, and/or prescribed fire fuel treatments.
224 (Wildfire Management)	VF3.1 VF3.2 VF3.4	X	X	<p>BLM: Consider all BLM-administered lands for protection and enhancement of wildlife habitat values. Wildfire activity planning will be accomplished within integrated activity plans.</p> <p>USFS: Prescribed fire will be utilized as a vegetative fuels management technique where it is the most cost efficient and acceptable alternative to achieve management objectives. Use unplanned ignitions on areas identified in this Plan to achieve management objectives, including to maintain or restore the ecological composition, structure and functioning of fire dependent ecosystems.</p>	<p>Allow management of naturally ignited wildfires to do the following:</p> <ul style="list-style-type: none"> Restore, maintain, or increase the amount, availability, and palatability/nutrition of wildlife forage/browse by setting back succession and creating a diverse age structure of plants. Restore, maintain, and vary the canopy cover in mature uniform-aged brush and pinyon-juniper stands. Restore, maintain, and vary ecological processes and forest age classes (including old growth forest habitats) where potential exists. 	Achieve the same outcomes as Alternative B, except manage naturally ignited wildfires and prescribed fires consistent with non-impairment standards.

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
					<ul style="list-style-type: none"> Restore, maintain, and vary the diversity and abundance of grasses and forbs in the understory of transition and winter range habitats for the critical period of late fall through early spring. 	

Table Acronyms: BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, BMP=best management practice, FSM=Forest Service Manual, N/A=not applicable, NRCS=Natural Resources Conservation Service, NRV=natural range of variability, OBJ=objective, OHV=off-highway vehicle, ROV=resources, objects, and values, USFS=U.S. Forest Service, WSA=Wilderness Study Area

2.3.6 Visual Resources, Night Skies, and Natural Soundscapes

Table 2.3-6. Alternative Details for Visual Resources, Night Skies, and Natural Soundscapes

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
N/A	N/A	X	X	Goal/Desired Condition VR1. Manage BCNM uses to maintain and promote public awareness and engagement with scenic quality, grandeur, night sky, and natural soundscapes. <u>Objectives</u> VR1.1 <i>Scenery-Night Sky-Sounds</i> – Maintain BCNM scenic values, vistas, overlooks, open spaces, night skies, and natural aesthetics. VR1.2 <i>Infrastructure</i> – Minimize impacts to visual resources by using BMPs and infrastructure design feature stipulations for color, contrast, background, integrity, form, and other visual criteria. VR1.3 <i>Artificial Light</i> – Manage artificial light at night (ALAN) to avoid unnecessary impacts to the quality of natural night skies and dark dependent wildlife habitats. VR1.4 <i>Natural Range of Variability</i> – Maintain integrity and stability of valued scenic character within the NRV.		
MANAGEMENT ACTIONS/STANDARDS COMMON TO ALL ACTION ALTERNATIVES						
225 (Night Sky)	VR1.1 VR1.2	X	X	No similar action	Require permanent and temporary artificial outdoor lighting be shielded and downward facing (“full cut-off” fixtures) to minimize impacts on naturally dark night skies. An exception, with mitigation, may be	Minimize light impacts within BCNM by applying BMPs as feasible.

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
					granted for temporary lighting if the requirement will create a hazard.	
MANAGEMENT ACTIONS/STANDARDS AND ADMINISTRATIVE DESIGNATIONS AND ALLOCATIONS FOR ALLOWABLE RESOURCE USE /MANAGEMENT AREAS BY ALTERNATIVE						
226 (Temporary Project Impacts)	VR1.1 VR1.2	X	X	No similar action	Prohibit projects that depart from VRM class objectives or) Scenic Integrity Objectives (SIO) standards.	Development or construction phases of projects may temporarily depart from VRM class objectives or Scenery Management System (SMS) SIO standards in BLM Class II and III and USFS High and Moderate areas given that the construction or development phases of projects do not exceed 5 years or less.
227 (Scenic Features, Night Skies, Natural Soundscapes-Inventory)	VR1.1 VR1.2 VR1.3 VR1.4	X	X	No similar action.	Working in partnership with local communities, universities, other agencies, and stakeholders: <ul style="list-style-type: none"> • Maintain night skies, measure light pollution, implement artificial light BMPs. • Maintain natural soundscapes, measure soundscapes, implement noise BMPs. 	Same as Alternative A.
228 (BLM VRM)	VR1.1 VR1.2	X		Maintain existing VRM class designations on BLM-administered surface lands (Appendix D, Map 6): <ul style="list-style-type: none"> • VRM Class I*: 0 acres • VRM Class II*: 9,272 acres • VRM Class III: 521 acres • VRM Class IV: 0 acres 	Manage for VRM class designations on BLM-administered surface lands (Appendix D, Map 7): <ul style="list-style-type: none"> • VRM Class I: 8,922 acres • VRM Class II: 429 acres • VRM Class III: 323 acres • VRM Class IV: 119 acres 	Manage for VRM class designations on BLM-administered surface lands (Appendix D, Map 8): <ul style="list-style-type: none"> • VRM Class I: 7,457 acres • VRM Class II: 1,601 acres • VRM Class III: 548 acres • VRM Class IV: 187 acres

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
229 (USFS SMS)	VR1.1 VR1.2		X	Maintain existing SIO designations on USFS-administered surface lands (Appendix D, Map 6): <ul style="list-style-type: none"> • Very High (VH): 0 acres • High (H): 0 acres • Moderate (M): 62 acres • Low (L): 11,750 acres • Very Low (VL): 0 acres Continue to manage scenery per USFS Management Area Prescriptions for 2B, 4B, 4D, 5B, and 6B (Appendix D, Map 5).	Manage for SIO designations on USFS-administered surface lands (Appendix D, Map 7): <ul style="list-style-type: none"> • Very High (VH): 11,069 acres • High (H): 743 acres • Moderate (M): 0 acres • Low (L): acres 0 acres • Very Low (VL): 0 acres 	Manage for SIO designations on USFS-administered surface lands (Appendix D, Map 8): <ul style="list-style-type: none"> • Very High (VH): 9,802 acres • High (H): 1,718 acres • Moderate (M): 292 acres • Low (L): acres 0 acres • Very Low (VL): 0 acres

*Per the 1996 RGRMP, WSAs are now managed by BLM Manual 6330 as VRM Class I.

Table Acronyms: BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, BMP=best management practice, H=high, L=low, M=moderate, N/A=not applicable, NRV=natural range of variability, OBJ=objective, SIO=Scenic Integrity Objectives, SMS=Scenery Management System, USFS=U.S. Forest Service, VH=very high, VL=very low, VRM=Visual Resource Management

2.3.7 Watersheds, Soils, and Water Resources

Table 2.3-7. Alternative Details for Watersheds, Soils, and Water Resources

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
N/A	N/A	X	X	Goal/Desired Condition WS1. Maintain and restore water quality, soil productivity and health, and aquatic and riparian habitat, according to “Colorado Public Land Health Standards” (BLM 1997) as well as applicable laws, regulations and executive orders. Objectives: WS1.1 Proper Functioning Condition (PFC) – Maintain monument riparian habitat and soil for proper function and condition in BCNM as measured by the “Colorado Public Land Health Standards” (BLM 1997) or other identified metric. WS1.2 Improvement – Restore soils, water quality, and riparian habitat not meeting “Colorado Public Land Health Standards” (BLM 1997), or areas meeting with problems; using PFC, BLM Multiple Indicators Monitoring (MIM); Assessment, Inventory, & Monitoring (AIM); or other scientifically acceptable method for monitoring.		

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
				WS1.3 Soils – Manage public lands to avoid unstable areas and steep slopes to minimize erosion outside of the natural range of variability. WS1.4 Watersheds – Protect groundwater, water quality and quantity, riparian areas, hydrology, and stream morphology processes.		
MANAGEMENT ACTIONS/STANDARDS COMMON TO ALL ALTERNATIVES						
230 (Water Rights)	WS1.1 WS1.2	X	X	Acquire water rights, in compliance with State law to further ROV objectives and to support monument management for livestock watering, recreational facilities, and wildlife habitat.		
MANAGEMENT ACTIONS/STANDARDS COMMON TO ALL ACTION ALTERNATIVES						
Watersheds and Soils						
231 (Plant Community Reestablishment)	WS1.1 WS1.2 WS1.4		X	No similar action. <i>Note: BMPs are applied on a case-by-case basis.</i>	Improve non-functioning (NF) or functioning at-risk (FAR) soil, water, aquatic, and riparian conditions by using USFS’s “National Best Management Practices for Water Quality Management on National Forest System Lands” (Technical Guide FS-990a) or other agency technical manuals to inform proper use and timing of implementing BMPs. Manage vegetation to improve composition and structure to minimize soil erosion. <i>Also see Recreation Record #307 Waste.</i>	
Water Resources						
232 (Infrastructure)	WS1.1 WS1.2 WS1.4	X	X	No similar action.	Allow new in-channel infrastructure to address sediment control and protect monument resources and values, such as minimizing erosion and improving water quality.	
MANAGEMENT ACTIONS/STANDARDS AND ADMINISTRATIVE DESIGNATIONS AND ALLOCATIONS FOR ALLOWABLE RESOURCE USE /MANAGEMENT AREAS BY ALTERNATIVE						
Watersheds and Soils						
233 (Surface- disturbing activities)	WS1.1 WS1.3 WS1.4	X	X	No similar action.	Avoid surface-disturbing activities, including trail development, within the following (Appendix D, Map 9): <ul style="list-style-type: none">• Public water reserves.• Active floodplains.• 100-year floodplain of the Arkansas River.• 250 feet of intermittent and perennial streams, rivers, riparian areas, wetlands, and springs.	No similar action.

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
					Non-mechanical vegetation treatments and recreational infrastructure will be allowed if they would benefit the watershed.	
Water Resources						
234 (Setbacks)	WS1.4	X	X	No similar action.	Apply setback / site-specific relocation to grazing improvements, salt blocks, recreation facilities, or other surface disturbing activities to a minimum distance of 328 feet (100 meters) from the edge of the riparian zone of naturally occurring seeps and springs (lentic riparian areas). Also apply setbacks to the spring/seep recharge zone where it is determined to extend more than 328 feet (100 meters).	No similar action.
235 (Recharge Areas)	WS1.4	X	X	No similar action.	In spring and seep recharge areas, maintain existing water developments in functional condition where needed to meet livestock management or wildlife needs. Otherwise, reclaim water developments to achieve biological resource objectives where practicable.	No similar action.
236 (Springs)	WS1.4	X	X	No similar action.	For all new water developments and other actions, inspect and characterize all springs and seeps located inside the affected watershed, down gradient and within one mile of proposed development. Allow for new water developments when a) surface disturbing actions would not directly impact the source area, b) characterization of the spring/seep indicates recharge potential would not be significantly altered, and c) development would be limited to instances where needed to achieve biological resource objectives.	No similar action.

Table Acronyms: AIM=Assessment, Inventory, & Monitoring, BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, BMP=best management practice, FAR=functioning at-risk, MIM=Multiple Indicator Monitoring, N/A=not applicable, NF=non-functioning, OBJ=objective, PFC=Proper Functioning Condition, ROV=resources, objects, and values, USFS=U.S. Forest Service

2.3.8 Wildlife and Fish

Table 2.3-8. Alternative Details for Wildlife and Fish

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
N/A	N/A	X	X	<p>Goal/Desired Condition WF1. Manage BCNM’s biological integrity of terrestrial and aquatic ecosystems to maintain, restore, and/or improve habitat, fish and wildlife populations, ecosystem health, ecological processes, and overall biodiversity.</p> <p>Objectives:</p> <p>WF1.1 Habitat Quality – Maintain and/or improve habitat quantity and quality (forage, water, cover, space, security, trophic level integrity, and biogeochemical processes) sufficient to sustain diverse wildlife populations in coordination with the CPW.</p> <p>WF1.2 Stream Habitat – Maintain and/or improve aquatic stream habitat to support productive and diverse fisheries and other aquatic populations.</p> <p>WF1.3 Connectivity – Maintain and/or improve habitat connectivity and unrestricted wildlife movement between ecological zones.</p> <p>WF1.4 Aquatic – Maintain, improve, and/or enhance aquatic and wildlife resources and provide for biological diversity to support healthy ecosystems.</p> <p>WF1.5 Public Education – Increase public education and appreciation of fish and wildlife species through interpretation.</p>		
N/A	N/A	X	X	<p>Goal/Desired Condition WF2 Avian: Migratory Birds, Raptors, Sensitive Species. Conserve migratory birds and raptors and their habitats in BCNM.</p> <p>Objectives:</p> <p>WF2.1 Migratory Birds – Conserve habitat for migratory birds and inventory through partnership and citizen science of migratory birds listed on the USFWS’s list of Birds of Conservation Concern and Partners-in-Flight Watch List species.</p> <p>WF2.2 Special Status – Maintain, restore, or enhance migratory bird and sensitive and special status avian species habitat.</p> <p>WF2.3 Important Nesting Areas – Apply limited use restrictions and seasonal closures of areas to protect important bird nesting areas.</p> <p>WF2.4 Human-Wildlife Conflicts – Increase public awareness of avian, raptor, and migratory bird issues to limit human wildlife conflicts and maintain the ecological integrity of wildlife habitats within BCNM.</p>		

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
N/A	N/A	X	X	Goal/Desired Condition WF3 <i>Big Game</i>. Maintain, improve, and/or restore habitat for big game species within production areas and winter ranges (e.g., critical winter range, winter concentration areas, severe winter range) by providing contiguous high quality and quantities of forage and browse, and hiding and thermal cover. Objectives: WF3.1 <i>Big Game</i> – Minimize adverse human disturbance of big game species in BCNM (e.g., bighorn sheep [<i>Ovis canadensis</i>], mule deer [<i>Odocoileus hemionus</i>], elk [<i>Cervus canadensis</i>]) in winter ranges (e.g., winter range, severe winter range, winter concentration areas), production areas, priority habitats, concentration areas, and migration corridors. WF3.2 <i>Corridors</i> – Maintain and improve BCNM contribution to landscape migration corridors, linkages, and connectivity of ranges for big game species, including important waterways. WF3.3 <i>Big Game Habitat</i> – Maintain big game habitat to meet or exceed the “Colorado Public Land Health Standards” (BLM 1997).		
N/A	N/A	X	X	Goal/Desired Condition WF4 <i>Native Terrestrial Species: Special Status Species (including Species of Conservation Concern)</i>. Maintain or improve priority habitats in BCNM for native terrestrial and special status species (e.g., non-special status reptiles, amphibians, birds, mammals, pollinators) as described in CPW’s “State Wildlife Action Plan.” Objectives: WF4.1 <i>Special Status Species</i> – Increase public knowledge of wildlife habitat and special status species through interpretation. WF4.2 <i>USFS Species of Conservation Concern (SCC)</i> – Identify SCCs in the BCNM in accordance with the USFS 2012 Planning Rule at 36 CFR 219 (2012) and Directives (USFS Handbook 1909.12). WF4.3 <i>Special Status Species Habitat</i> – Maintain or improve the quality of Canada lynx, Mexican spotted owl, and other special status species habitat. WF4.4 <i>Adaptive Management</i> – Employ adaptive management of special status species and their habitats within the monument, including conducting inventories to determine to the extent practicable the distribution, abundance, and population and habitat conditions and trends.		
MANAGEMENT ACTIONS/STANDARDS COMMON TO ALL ALTERNATIVES						
237 (Nesting Birds)	WF1.1	X	X	As practicable, from April 15 to July 15 or if nesting birds are observed, avoid or minimize surface-disturbing activities, vegetation-altering projects, and broad-scale use of pesticides in identified and occupied priority migratory bird habitat.		
238 (Fencing)	WF1.3 WF3.2	X	X	Require that newly constructed fences accommodate passage by wildlife. As funding allows, modify or replace existing fences that do not allow passage by wildlife.		

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
239 (Recreation Conflicts)	WF1.1 WF1.2 WF1.4 WF2.1 WF2.2 WF2.3 WF3.1 WF3.2 WF3.3	X	X	Apply mitigation, including application of appropriate BMPs, for public activities (new trails, developed areas, etc.) and permitted new activities (SRPs, SUPs, etc.) in the following habitats, if necessary (Appendix D, Maps 10 and 24): <ul style="list-style-type: none"> Waterfowl and shorebird habitat within significant production areas Big game migration and movement corridors Rocky Mountain bighorn sheep production (lambing) areas and winter concentration areas Raptor nesting areas Mule deer winter concentration area Elk production (calving) and winter concentration areas Special status species habitat as identified based on site specific assessment and/or habitat or population inventory 		
240 (Facility Improvements)	WF1.1 WF2.4 WF4.4	X	X	Modify facilities, infrastructure, and range improvements (e.g., capping pipes, marking wires, installing bat gates) that are harmful to migratory birds or bats during permit reauthorization or approval.		
MANAGEMENT ACTIONS/STANDARDS AND ADMINISTRATIVE DESIGNATIONS AND ALLOCATIONS FOR ALLOWABLE RESOURCE USE /MANAGEMENT AREAS BY ALTERNATIVE						
241 (Seasonal Use)	WF1.1 WF2.1 WF2.2 WF3.1	X	X	BLM: No similar action. <i>Note: Other use restrictions are determined case by case based on potential impacts to wildlife and habitat.</i> USFS: Continue to apply seasonal wildlife closures per USFS Management Area Prescriptions for 4D and 5B (Appendix D, Map 5).	Implement seasonal use restrictions on SRPs and large group events within the following areas to maintain the integrity of inventoried and known nest sites and surrounding habitat: <ul style="list-style-type: none"> 0.5-mile (0.8-kilometer [km]) radius of prairie or peregrine falcon nest sites from March 15 to July 31. 0.33-mile (0.5-km) radius of red-tailed hawk nest sites from February 15 to July 15 0.25-mile (0.4-km) radius of all other non-special status raptor (accipiter, falcon [except kestrel], buteos, and owl) nest sites from January 1 to July 15. 	Same as Alternative A.

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
242 (Trail Development)	WF1.5 WF3.1 WF3.3	X	X	BLM: No similar action. <i>Note: Trail development is allowed on a case-by-case basis.</i> USFS: Continue to manage recreational trails per USFS Management Area Prescriptions for 2B, 4B, 4D, 5B, and 6B (Appendix D, Map 5).	Prohibit new trail development in big game winter range.	Allow for new trail development in big game winter range. Apply seasonal use prohibitions on key areas during sensitive seasons. Any new trail development will undergo site-specific NEPA analysis.
243 (Climbing Access – Raptors)	WF1.5 WF2.1 WF2.2 WF3.1	X	X	BLM: No similar action. <i>Note: Climbing area and route closures are determined on a case-by-case basis.</i> USFS: Continue to apply seasonal wildlife closures per USFS Management Area Prescriptions for 4D and 5B (Appendix D, Map 5).	Apply seasonal area restrictions for climbing, camping, and other incompatible recreational uses in the following areas: <ul style="list-style-type: none"> 0.5-mile (0.8-km) radius of falcon nesting sites in Railroad Gulch and other sites as determined through inventory from March 1 to July 31. 	Identify on an annual basis where climbing routes would be restricted based on raptor nests and close climbing routes based on site-specific analysis.
244 (Climbing Access – Big Horn Sheep)	WF1.5 WF2.2 WF3.1	X	X	BLM: No similar action. <i>Note: Climbing area and route closures are determined on a case-by-case basis.</i> USFS: Continue to apply seasonal wildlife closures per USFS Management Area Prescriptions for 4D and 5B (Appendix D, Map 5).	Apply seasonal area restrictions to climbing, camping, and other incompatible recreational uses in the following areas (Appendix D, Map 10): <ul style="list-style-type: none"> Bighorn sheep concentration areas along the river from May 15 to July 14. Bighorn sheep production (lambing) areas from April 15 to June 30. 	No similar action.

Table Acronyms: BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, BMP=best management practice, CPW=Colorado Park's and Wildlife, N/A=not applicable, NEPA=National Environmental Policy Act OBJ=objective, SCC=Species of Conservation Concern, SRP=Special Recreation Permit, SUP=Special Use Permit, USFS=U.S. Forest Service, USFWS=U.S. Fish and Wildlife Service

2.3.9 Recreation

Table 2.3-9. Alternative Details for Recreation

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
N/A	N/A	X	X	<p>Goal/Desired Condition REC1. Provide a diverse range of recreation opportunities that supports outdoor-oriented lifestyles; enhances quality of life for local communities; adds to visitor sense of well-being and healing through enjoyment of monument naturalness, quiet, solitude, and WSR adventure; and fosters protection of monument natural and cultural ROVs.</p> <p>Objectives:</p> <p>REC1.1 Opportunities-Settings - Manage for sustainable recreation and visitor access to the eligible WSR, areas with wilderness characteristics, and areas with primitive, middle-, and backcountry settings; specifically whitewater rafting, kayaking, river and on shore fishing/angling, stand-up paddle boarding, hiking, enjoying quiet, solitude, naturalness, hunting, fitness, sightseeing, universally accessible opportunities, scenic driving/viewing, dispersed camping, and interpretation.</p> <p>REC1.2 Partnerships-Collaboration - Collaborate with State, local agency, private associations, and other organizations (e.g., commercial outfitters/guiding operations, civic organizations, friends groups) to monitor and manage recreation use through management zoning or similar methods.</p> <p>REC1.3 Monitoring - Allow for continued and enhanced monitoring of dispersed recreational use to track and evaluate impacts.</p> <p>REC1.4 Adaptive Management - Assess need, adaptively plan, and manage potential type, level, and location of elevated recreation management strategies in monument settings (e.g., designated river corridor and backcountry campsites, private and commercial use, permits).</p> <p>REC1.5 Information - Update and coordinate information and marketing materials to manage visitor expectations and focus visitor use to desired locations.</p>		
N/A	N/A	X	X	<p>Goal/Desired Condition REC2. Maintain sustainable levels of facilities, infrastructure, and visitor services consistent with a variety of recreation settings and outcomes ranging from quiet, solitude, and remote wilderness quality to high use river recreation and including individual, group, private, and commercial experiences to serve growing visitor demand while managing for other uses.</p> <p>Objectives:</p> <p>REC2.1 River Services - Maintain and provide BCNM river recreation services, facilities, and settings for cooperative management of the AHRA.</p> <p>REC2.2 Wilderness Opportunities - Sustain wilderness quality settings and level of visitor services in the Browns Canyon WSA that are harder to reach, where quiet and solitude can be experienced and naturalness can be enjoyed.</p>		

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
				REC2.3 Trails - Evaluate, maintain, improve, close, rehabilitate, or expand trails, including but not limited to the existing location and layout of permitted non-system trails, to accommodate varied recreation users (e.g., hikers, equestrian, mountain bikers, seniors, and those with disabilities). REC2.4 Damage-Trespass – Curb illegal trespass and property damage, and address public safety concerns.		
N/A	N/A	X	X	Goal/Desired Condition REC3. Visitor use enhances and knowingly protects a sustainable and vibrant outdoor recreation environment while not degrading recreation settings or ROVs. Objectives: REC3.1 Partnerships – Employ agency and empower citizen-based recreation management and protection of prehistoric and historic heritage resources. REC3.2 Collaboration-Conflict – Increase collaboration and cooperation with community partners and other service providers to help communities produce greater wellbeing and socioeconomic health, and deliver outstanding recreation experiences to visitors, while sustaining the distinctive character of public lands recreation settings. REC3.3 Interpretation-Stewardship – Increase awareness, understanding, and a sense of stewardship in recreational activity participants so their conduct safeguards cultural and natural resources. REC3.4 Recreation Restoration – Apply restoration of recreation damage to ROVs, such as prehistoric and historic cultural heritage resources. REC3.5 Heritage Interpretation – Develop visitor interpretation of irreplaceable prehistoric and historic cultural heritage resources.		
MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES						
301 (USFS Recreation Opportunities Spectrum [ROS])	REC1.1 REC1.2 REC1.3 REC1.4 REC2.3 REC2.4 REC3.1 REC3.2 REC3.3 REC3.4 REC3.5		X	USFS-administered lands within the BCNM would be managed with USFS ROS categories.		
302 (USFS)	REC1.1 REC1.2		X	For USFS-administered lands in the monument, construct, reconstruct, and maintain developed sites in accordance with the established ROS classification for the given area and the USFS Built Environment Image Guide (BEIG).		

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
	REC1.3 REC1.4 REC2.3 REC2.4 REC3.1 REC3.2 REC3.3 REC3.4 REC3.5			See also Section 2.4 “Recreation Management of BCNM Gateway Lands” and Appendix L “Management Zones Frameworks for Recreation and Visitor Services.”		
MANAGEMENT ACTIONS COMMON TO ALL ACTION ALTERNATIVES						
303 (Camping at Trailheads)	REC1.1 REC1.3 REC1.4 REC1.5 REC2.3	X	X	No similar action.	Prohibit camping in trailheads or other facilities intended for day-use only, except where allowed in MZs.	
304 (Social trail rehabilitation)	REC1.1 REC1.2 REC1.3 REC1.4 REC1.5 REC2.1 REC2.2 REC2.3 REC2.4 REC3.3 REC3.4	X	X	No similar action	Close, rehabilitate, or designate all undesignated social routes to achieve MZ outcomes, settings, and characteristics and to protect monument ROVs.	
MANAGEMENT ACTIONS/STANDARDS AND ADMINISTRATIVE DESIGNATIONS AND ALLOCATIONS FOR ALLOWABLE RESOURCE USE /MANAGEMENT AREAS BY ALTERNATIVE FOR ALL LANDS						
305 Management Zones (MZs)	All listed	X	X	BLM: Continue to manage recreation on the lands within the Arkansas River Special Recreation Management Area (SRMA) (9,938 acres) (Appendix D, Map 11).	Allocate BCNM lands under the following MZs and landscape settings (Appendix D, Map 12 and Section 2.2): <ul style="list-style-type: none">Arkansas River Shore and Passage (Primitive to Front Country; 538 acres)	Allocate BCNM lands under the following MZs and landscape settings (Appendix D, Map 13 and Section 2.2): <ul style="list-style-type: none">Arkansas River Shore and Bench (Primitive to Front Country; 1,701 acres)

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
				<p>USFS: Continue to manage recreation per USFS Management Area Prescriptions (Appendix D, Map 11):</p> <ul style="list-style-type: none"> • 2B: Rural and roaded-natural (61 acres). • 4B: Recreation and other human activities are regulated to favor the needs of the designated species (18 acres). • 4D: Recreational opportunities available are semi-primitive non-motorized and motorized or roaded natural (387 acres). • 5B: New roads other than short-term temporary roads are located outside of the management area (6,970 acres). • 6B: Dispersed recreational opportunities vary between semi-primitive non-motorized and roaded natural (4,376 acres). 	<ul style="list-style-type: none"> • Monument – River East (Primitive; 19,542 acres) • Monument – River West (Backcountry; 405 acres) • Aspen Ridge (Primitive to Backcountry; 475 acres) • Railroad Gulch (Primitive; 257 acres) • Turret Road (Backcountry; 268 acres) • Ruby Mountain – Hecla Junction Access (Front Country; 119 acres) 	<ul style="list-style-type: none"> • Monument – River East (Primitive to Backcountry; 15,852 acres) • Monument – River West (Backcountry to Middle Country; 1,293 acres) • Aspen Ridge (Backcountry to Middle Country; 1,717 acres) • Railroad Gulch (Primitive to Backcountry; 636 acres) • Turret Road (Backcountry; 292 acres) • Ruby Mountain – Hecla Junction Access (Front Country; 112 acres)
306 (Target Shooting)	REC1.1 REC1.2 REC1.3 REC1.5 REC2.4 REC3.1 REC3.2 REC3.3	X	X	<p>No similar action.</p> <p><i>Note: Discharge of firearms is prohibited in all developed recreation sites and areas per 43 CFR 8365.2-5(a).</i></p> <p><i>State and local laws and ordinances regarding use of firearms or other weapons shall apply per 43 CFR 8365.1-7(c).</i></p>	<p>Prohibit recreational target shooting within the BCNM (21,604 acres) (Appendix D, Map 14).</p> <p><i>Note: Discharge of firearms is prohibited in all developed recreation sites and areas per 43 CFR 8365.2-5(a).</i></p> <p><i>State and local laws and ordinances regarding use of firearms or other weapons shall apply per 43 CFR 8365.1-7(c).</i></p>	<p>Prohibit recreational target shooting in the following areas (1,817 acres) (Appendix D, Map 15):</p> <ul style="list-style-type: none"> • Within the Arkansas River Shore and Bench MZ • Within the Ruby Mountain- Hecla Junction Access MZ • Within 50 feet of County/BLM Road 300 • Within 50 feet of County Road 194 <p><i>Note: Discharge of firearms is prohibited in and within 150 yards of</i></p>

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
						<p><i>all developed recreation sites and areas per 43 CFR 8365.2-5(a) and 36 CFR 261.10 (d).</i></p> <p><i>State and local laws and ordinances regarding use of firearms or other weapons shall apply per 43 CFR 8365.1-7(c).</i></p>
307 (Waste)	REC1.1 REC1.3 REC1.4 REC1.5 REC2.1 REC2.2 REC2.4 REC3.1 REC3.2 REC3.3	X	X	No similar action.	<p>Develop an education program to encourage proper human and pet waste disposal along the Arkansas River. Require human and pet waste collection and disposal offsite at the following locations:</p> <ul style="list-style-type: none"> • Within the Arkansas River Shore and Passage MZ • Within the Ruby Mountain – Hecla Junction Access MZ • River Bench, River Access, and Turret trails <p>Allow for adaptive management of human and pet waste collection and disposal offsite in other monument locations based on monitoring of degradation or damage to MZ outcomes or ROVs.</p>	<p>Develop an education program to encourage proper human and pet waste disposal along the Arkansas River. Require human and pet waste collection and disposal offsite at the following locations:</p> <ul style="list-style-type: none"> • Within the Arkansas River Shore and Bench MZ • Within the Ruby Mountain – Hecla Junction Access MZ • Within the Railroad Gulch MZ <p>Allow for adaptive management of human and pet waste collection and disposal offsite in other monument locations based on monitoring of degradation or damage to MZ outcomes or ROVs or where waste is resulting in violations of State or Federal water quality standards or posing a risk to human health or safety.</p>
308 (Arkansas River Crossing)	REC1.1 REC1.5 REC2.1 REC2.2 REC2.3 REC2.4	X		No similar action.	Prohibit lands for development of an Arkansas River crossing within BCNM.	Allow lands for development of non-motorized crossing(s) of the Arkansas River, i.e., bridge or rock, within BCNM outside of the WSA in the following near shore areas if crossings would not interfere with valid and existing ROWs:

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
						<ul style="list-style-type: none"> Arkansas River Shore and Bench MZ; Monument – River East MZ; Monument – River West MZ; Ruby Mountain – Hecla Junction Access MZ
309 (Special Recreation Permits and Special Use Permits)	REC1.1 REC1.2 REC1.3 REC1.4 REC1.5 REC2.1 REC2.2 REC2.3 REC2.4 REC3.1 REC3.2 REC3.3 REC3.4	X	X	No similar action. <i>Note: SRPs and SUPs are issued on a case-by-case basis consistent with current laws, regulations, and guidance.</i>	Prohibit SRPs within Browns Canyon WSA. Allow SRPs and SUPs on a case-by-case basis that support MZ objectives. Consider factors such as the size of equipment, size of area used, number of participants, frequency of use, and compatibility with other uses.	Allow SRPs and SUPs on a case-by-case basis consistent with current laws, regulations, and guidance that support MZ objectives and factors such as the size of equipment, size of area used, number of participants, frequency of use, and compatibility with other uses. Allow SRPs and SUPs as an adaptive management tool to mitigate impacts to the WSA and other ROVs within the monument (e.g., guided day hiking to inform visitors of ROVs, user ethics, management issues).
310 (Competitive Events)	REC1.1 REC1.2 REC1.3 REC1.4 REC1.5 REC2.1 REC2.3 REC3.3 REC3.4	X	X	No similar action. <i>Note: Competitive events are permitted on a case-by-case basis consistent with current laws, regulations, and guidance.</i>	Prohibit competitive events (e.g. foot, mechanized, OHV races) within BCNM, except on the river surface.	Allow competitive events within non-WSA BCNM lands and river surface on a case-by-case basis.

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
MANAGEMENT ACTIONS/STANDARDS AND ADMINISTRATIVE DESIGNATIONS AND ALLOCATIONS FOR ALLOWABLE RESOURCE USE /MANAGEMENT AREAS BY ALTERNATIVE PER MZ						
Arkansas River Shore and Passage (Alternative B) and Arkansas River Shore and Bench (Alternative C) MZ						
311 (Camping)	All listed	X		No similar action.	Employ camping registration systems or number limitations to reduce user conflicts. Limit camping to designated dispersed camping sites.	Use adaptive management techniques and triggers to implement management actions such as camping registration systems or numbers limitations to reduce user conflicts. Limit camping to designated dispersed camping sites.
312 (Trails)	All listed	X		No similar action.	Close, rehabilitate, or designate undesignated social routes.	Designate, re-align, and maintain new system trails. Close, rehabilitate, or designate undesignated social routes.
313 (Rail – Trail Proposals)	All listed	X		No similar action	Do not allocate lands for proposal and development of system railroad trail.	Subject to valid and existing Union Pacific ROW, allocate lands for proposal and development of a system railroad trail (152 acres) (Appendix D, Map 18).
Monument - River East MZ						
314 (Monument River East MZ)	All listed	X	X	BLM: No similar action. USFS: Continue to manage recreation per USFS Management Area Prescriptions for 2B, 4B, 4D, 5B, and 6B (Appendix D, Map 5).	Close, rehabilitate, or designate undesignated social routes. Employ adaptive management strategies, such as: <ul style="list-style-type: none"> • Limits on group size. • Restrictions on overnight camping within 300 feet of any surface water. • Duration limits on overnight camping. • Camping setback limits near trailheads. • Limits on campfires. • Limits on SUPs/SRPs. 	Designate non-motorized or mechanized system trails and signage. Allow new trail construction outside of the WSA. Allow use of primitive routes (not signed or placed on maps) to achieve MZ objectives and settings.

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
					<ul style="list-style-type: none"> Seasonal closures of trails and roads. Prohibit designation of new non-motorized or mechanized system trails, on-site posting/signing of visitor regulations, interpretive information.	
Monument - River West MZ						
315 (Monument - River West MZ Routes)	All listed	X	X	No similar action.	Close, rehabilitate, or designate undesignated social routes. Allow seasonal closures of trails and roads. Prohibit development of new parking areas, trailheads, trails, and signage.	Develop new trailheads, trails, scenic overlooks, signage, campgrounds and/or overnight facilities, and Architectural Barriers Act (ABA) compliant parking facilities. Allow seasonal closures to trails and roads. Close, rehabilitate, or designate undesignated social routes.
316 (Monument - River West MZ – Trails & Camping)	All listed	X	X	No similar action.	Require the use of fire-pans where overnight camping is allowed. Prohibit: <ul style="list-style-type: none"> New development of trails, trailheads, campsites, other new infrastructure. Dispersed camping. Overnight parking. 	Develop new trails, trailheads, designated dispersed camping sites, and parking facilities. Camping, where allowed, would be limited to 7 days. Camping/overnight use in trailheads or other facilities intended for day-use only would not be allowed. Camping would be allowed in designated sites only. Allow overnight parking to support backcountry use. Require the use of fire-pans where overnight camping is allowed.

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
Aspen Ridge MZs						
317 (Aspen Ridge MZ Trails)	All listed		X	BLM: No similar action. USFS: Continue to manage recreation per USFS Management Area Prescriptions for 4D, 5B, and 6B (Appendix D, Map 5).	Prohibit development of new trailhead, trails, parking, signage, and kiosks.	Consistent with the USFS Colorado Roadless Rule: <ul style="list-style-type: none"> Develop or designate new trailheads and trails for hiking, bicycling, and equestrian use. Develop ABA/Forest Service Trail Accessibility Guidelines (FSTAG)-compliant trails to scenic overlooks and interpretive opportunities. Develop signs and kiosks for navigation and interpretation purposes.
318 (Aspen Ridge MZ Camping)	All listed		X	No similar action.	Do not designate any areas for camping with motorized vehicle access. Camping, where allowed, would be limited to 7 days. Camping/overnight use in trailheads or other facilities intended for day-use only would not be allowed. Allow overnight parking to support backcountry use. Allow walk-in camping in designated sites only. Require the use of fire-pans where overnight camping is allowed.	Designate areas for camping with motorized vehicle access. Camping, where allowed, would be limited to 7 days. Camping/overnight use in trailheads or other facilities intended for day-use only would not be allowed. Allow overnight parking to support backcountry use. Camping would be allowed in designated sites only. Require the use of fire-pans where overnight camping is allowed.
Railroad Gulch MZ						
319 (Railroad Gulch MZ)	All listed			BLM: No similar action. USFS: Continue to manage recreation per USFS Management Area Prescriptions	Allow controls to reduce impacts to resources from social trails and parking.	Allow new trailheads, parking areas, non-mechanized trails, and signage; including maps for directing visitors.

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
				for 2B and 5B (Appendix D, Map 5).	Do not develop visitor information amenities (e.g., map sign boards) and signing. Prohibit development of new trails, trailheads, or parking facilities.	
Turret Road MZ						
320 (Turret Road MZ Trailheads and Trails)	All listed		X	BLM: No similar action. USFS: Continue to manage recreation per USFS Management Area Prescriptions for 2B and 5B (Appendix D, Map 5).	Allow controls to reduce impacts to ROVs from social trails and parking. Do not develop visitor contact infrastructure, trailheads, trails, parking facilities, toilets, informational signs, and kiosks.	Allow controls to reduce impacts to ROVs from social trails and parking. Allow development of visitor contact infrastructure, trailheads, trails, parking facilities, vehicle turn-around, toilets, informational signs, and kiosks.
321 (Turret Road MZ Camping)	All listed		X	No similar action.	Allow motorized dispersed camping within one vehicle length off of designated routes, where not specifically prohibited, unsafe, or causing resource damage. Camping, where allowed, would be limited to 7 days. Camping/overnight use in trailheads or other facilities intended for day-use only would not be allowed. Allow overnight parking to support backcountry use. Allow walk-in camping in designated sites only. Require the use of fire-pans where overnight camping is allowed.	Designate and develop new designated dispersed camping, toilets, parking, and turn around routes. Designate areas for camping with motorized vehicle access. Camping, where allowed, would be limited to 7 days. Camping/overnight use in trailheads intended for day-use only would not be allowed. Allow overnight parking to support backcountry use. Allow walk-in camping in designated sites only. Require the use of fire-pans where overnight camping is allowed.

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
Ruby Mountain - Hecla Junction Access MZ						
322 (Ruby Mountain - Hecla Junction Access MZ)	All listed	X		No similar action.	Camping would be allowed in designated sites only. Do not designate any sites for camping with vehicle access outside of the developed campgrounds. Camping, where allowed, would be limited to 14 days in a 45-day period. Camping/overnight use in trailheads or other facilities intended for day-use only would not be allowed. Require the use of fire-pans where overnight camping is allowed. Parking overnight would be allowed to support backpacking/overnight use. Develop a capacity management systems (i.e., dispersed camping reservation system).	

Table Acronyms: ABA=Architectural Barriers Act, AHRA=Arkansas Headwaters Recreation Area, BCNM=Browns Canyon National Monument, BEIG=Built Environment Image Guide, BLM=Bureau of Land Management, CFR=Code of Federal Regulations, FSTAG=Forest Service Trail Accessibility Guidelines, MZ=management zone, N/A=not applicable, OBJ=objective, ROS=Recreation Opportunities Spectrum, ROV=resources, objects, and values, ROW=Right-of-way, SRMA=special recreation management area, SRP=Special Recreation Permit, SUP=Special Use Permit, USFS=U.S. Forest Service, WSA=Wilderness Study Area WSR=Wild and Scenic River

2.3.10 Travel and Transportation Management

Table 2.3-10. Alternative Details for Travel and Transportation Management

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
N/A	N/A	X	X	Goal/Desired Condition TM1. Manage a BCNM travel and transportation system that accommodates a variety of uses and growing visitation, minimizes user conflicts, and contributes to protection of sensitive resources (such as wildlife habitat, riparian areas, and cultural resources). <u>Objectives:</u> TM1.1 Ingress-Egress-Parking – Work with the local and State agencies to provide safe ingress, egress, and parking for the BCNM at Ruby Mountain, Hecla Junction, Aspen Ridge Road, Turret Road, and Turret Trail. TM1.2 Travel Opportunities – Provide travel opportunities as open, closed, or limited for all travel modes (from motorized to non-motorized, including access for visitors with disabilities), based on opportunities provided and/or the need to protect resources per Presidential Proclamation 9232.		

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
				TM1.3 Protection – Sustain compatible traditional, current, and future use of the land by establishing a route system that contributes to protection of sensitive resources, accommodates recreation and grazing uses, and minimizes user conflicts.		
MANAGEMENT ACTIONS/STANDARDS COMMON TO ALL ALTERNATIVES						
323 (Safe Access)	TM1.1 TM1.2	X	X	In cooperation with State and local governments, study and develop feasible solutions for monument access; travel and transportation options to serve varied scenarios of visitor growth; and reducing and/or mitigating monument transportation and travel infrastructure risk factors, vehicle collision, and public safety risks.		
324 (Route Designations)	TM1.1 TM1.2 TM1.3	X	X	Travel decisions will be consistent with existing Travel Management Plans (TMPs). The BLM and USFS recognize planning and administration of the travel routes and facilities include county, State, and Federal infrastructure. Routes may be analyzed and approved separately.		
325 (County Coordination)	TM1.1	X	X	Actively participate in Chaffee County travel management planning for access to the monument and collaboratively seek feasible solutions to address issues created outside the monument.		
MANAGEMENT ACTIONS/STANDARDS COMMON TO ALL ACTION ALTERNATIVES						
326 (OHV Area Designations)	TM1.1 TM1.2 TM1.3	X	X	Maintain existing OHV travel consistent with existing travel management decisions and consistent with Presidential Proclamation 9232 (Appendix D, Map 16). <ul style="list-style-type: none">• OHV Open: 0 acres• OHV Limited: 14,141 acres• OHV Closed: 7,463 acres BLM: Continue to manage BLM-administered land per the 1996 RGRMP. USFS: Continue to manage USFS-administered land according to USFS Management Area Prescriptions for 2B, 4B, 4D, 5B, and 6B (Appendix D, Map 5), and per the 2012 Colorado Roadless Rule.	Consistent with the Presidential Proclamation 9232, limit OHV travel and equipment routes previously designated as such, and consistent with the care and management of ROVs. Allocate the following OHV area designations (Appendix D, Map 16): <ul style="list-style-type: none">• OHV Open: 0 acres• OHV Limited: 14,141 acres• OHV Closed: 7,463 acres	
327 (Route Rehabilitation)	TM1.1 TM1.2 TM1.3	X	X	No similar action.	Allow rehabilitation and reclamation of routes, or sections of routes, within the monument to protect monument ROVs.	

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
328 (Non-motorized, non-mechanized Routes)	TM1.1 TM1.2 TM1.3	X	X	No similar action	Allow non-motorized, non-mechanized route designation if compatible with MZ objectives.	
329 (Over Snow Vehicles)	TM1.1 TM1.2 TM1.3	X	X	No similar action	Consistent with Presidential Proclamation 9232 and seasonal closures for wildlife protections, BCNM is closed to over-snow vehicles, except on designated system routes.	
330 (Shuttle System)	TM1.1 TM1.2 TM1.3	X	X	No similar action	Allow shuttle system SRPs to address visitor capacity within BCNM.	
331 (County/BLM Road 300 [Ruby] – County Road 194 [Hecla Junction])	TM1.1 TM1.2 TM1.3	X	X	No similar action	Allow County/BLM Road 300 and County Road 194 system ingress/egress facility improvement for visitor safety and capacity management within BCNM.	
332 (Motorized Routes)	TM1.1 TM1.2 TM1.3	X	X	Trailheads and motorized/multiple-use trails will be established to meet public demand. New motorized trails are allowed only west of the Arkansas River and at the Ruby Mountain Recreation Site, and only when necessary to provide reasonable river or campground access. <i>See Lands and Realty Record # 350 for management actions on unmanned aircraft systems (UASs).</i>	Refer to Section 2.3.9 “Recreation” above for level and type of desired recreation settings per MZ. Consistent with Presidential Proclamation 9232, new motorized trails are allowed only west of the Arkansas River and at the Ruby Mountain Recreation Site, and only when necessary to provide reasonable river or campground access. <i>See Lands and Realty Record # 350 for management actions on UASs.</i>	
323 (Mechanized Travel)	TM1.1 TM1.2 TM1.3	X		No similar action	Limit mechanized travel and equipment to routes designated specifically for such use and routes where OHV use is allowed (unless mechanized use is otherwise specifically prohibited).	

Table Acronyms: BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, MZ=management zone, N/A=not applicable, OBJ=objective, OHV=Off-highway vehicle, RGRMP=Royal Gorge Resource Management Plan, ROV=resources, objects, and values, SRP=Special Recreation Permit, TMP=Travel Management Plan, UAS=Unmanned Aircraft Systems, USFS=U.S. Forest Service

2.3.11 Range and Livestock Grazing

Table 2.3-11. Alternative Details for Range and Livestock Grazing

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
N/A	N/A	X	X	Goal/Desired Condition LG1. Maintain, restore, or enhance rangeland health and provide for appropriate livestock grazing opportunities. Objectives: LG1.1 Conditions – Manage livestock use to meet the “Colorado Public Land Health Standards” (BLM 1997) and USFS Desired Condition. LG1.2 Grazing Use – Balance livestock grazing use and stocking rates with available forage to meet desired vegetation and habitat structural conditions.		
N/A	N/A	X	X	Goal/Desired Condition LG2. Promote visitor education about grazing use on public lands in relation to validity, importance to community culture, and open space conservation. Objectives: LG2.1 Public Interpretation – Display interpretive materials related to livestock grazing use at kiosks or other central locations.		
MANAGEMENT ACTIONS/STANDARDS COMMON TO ALL ALTERNATIVES						
334 (Grazing Focus)	LG1.1 LG1.2 LG2.1	X	X	Livestock grazing use will be managed consistent with the laws, regulations, and policies currently followed by the BLM or the USFS in issuing and administering grazing permits or leases on lands under their jurisdiction.		
335 (Healthy Rangelands)	LG1.1 LG1.2 LG2.1	X	X	Design grazing systems and range improvements per the BLM Guidelines for Livestock Grazing Management in Colorado and based on BASI and BMPs to achieve and maintain healthy rangelands.		
336 (Vehicle Use)	LG1.1	X	X	Authorize vehicle use for new range improvements and maintenance of existing range improvements, including water rights and grazing permit use, as long as resource damage does not occur and no new routes are created.		
337 (Range Improvements)	LG1.1	X	X	Construct range improvement projects to achieve resource condition objectives, mitigate other user and resource conflicts, and provide the greatest forage value for livestock on an as-needed basis.		
338 (Trailing)	LG1.2	X	X	Authorize livestock trailing permits through BCNM consistent with the protection of monument ROVs following adequate NEPA review.		

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
339 (Adaptive Management)	LG1.1 LG1.2	X	X	Allow adjustments in grazing use or other uses on a case-by-case basis to achieve resource objectives to improve ecosystem health, reduce conflict with other resources, and best protect vegetative resources and community values. Changes in number of livestock, season-of-use and duration-of-use should be based on pertinent monitoring studies and inventory data. In times of drought, cooperate with stakeholders for adjustments in livestock use and management.		
340 (Kinds of Livestock)	LG1.1	X	X	Do not restrict allotments to specific kinds and classes of livestock, as long as there are no identified disease or wildlife related issues and adequate infrastructure for control of livestock is currently in place or will be constructed.		
341 (Allotment Allocations – BLM)	LG1.1 LG1.2 LG2.1	X		Maintain 9,615 acres in the BLM Ruby Mountain, Hecla Junction East, Hecla Junction West, Sugarloaf Mountain, and Three Mile Creek allotments as open to livestock grazing. Grazing allotments will not be closed.		
342 (Allotment Allocations – USFS)	LG1.1 LG1.2 LG2.1		X	Maintain 7,560 acres in the USFS Aspen Ridge and Cameron allotments as open to livestock grazing. Grazing allotments will not be closed.		
MANAGEMENT ACTIONS/STANDARDS COMMON TO ALL ACTION ALTERNATIVES						
343 (Management Categories)	LG1.1 LG1.2	X		BLM: Currently, the Hecla Junction East, Three Mile Creek, and Sugarloaf Mountain allotments are classified under Custodial management. The Hecla Junction West and Ruby Mountain allotments are classified under Maintain management	Allow for the ability to adjust BLM range allotment management categories to Maintain and Improve categories in order to meet monument objectives.	
344 (Range Improvement Standards)	LG1.1 LG1.2	X	X	No similar action.	Inventory and assess existing range improvements. Allow for removal of structural improvements that are no longer needed. Allow improvements that are designated for retention to be improved and upgraded to meet current standards.	

Table Acronyms: BASI=best available scientific information, BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, BMP=best management practice, N/A=not applicable, NEPA=National Environmental Policy Act, OBJ=objective, ROV=resources, objects, and values, USFS=U.S. Forest Service

2.3.12 Lands and Realty

Table 2.3-12. Alternative Details for Lands and Realty

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
N/A	N/A	X	X	Goal/Desired Condition LR1. Manage ROWs, Special Use Authorizations (SUAs), authorizations, and surface use of lands in a manner that improves efficient management and protects the BCNM ROVs. <u>Objectives:</u> LR1.1 Administration – Administer existing authorizations, ROWs, SUAs, and leases to protect BCNM ROVs. LR1.2 Avoidance – Avoid designating, authorizing, or employing ROW or SUAs for transportation or utility corridor use.		
MANAGEMENT ACTIONS/STANDARDS COMMON TO ALL ALTERNATIVES						
345 (Trespass)	LR1.1	X	X	Identify, manage, and resolve trespasses and other unauthorized uses by removal and site restoration or, when appropriate, through ROW, SUAs, or other authorization procedures.		
MANAGEMENT ACTIONS/STANDARDS COMMON TO ALL ACTION ALTERNATIVES						
346 (Recreation and Public Purpose [R&PP] Leases)	LR1.1	X		Additional R&PP leases within the cooperative management lands will be issued if the criteria in the RGRMP are met.	No additional R&PP leases within the BCNM cooperative management agreement area will be issued (see Appendix D, Map 18 for existing R&PP leases).	
MANAGEMENT ACTIONS/STANDARDS AND ADMINISTRATIVE DESIGNATIONS AND ALLOCATIONS FOR ALLOWABLE RESOURCE USE /MANAGEMENT AREAS BY ALTERNATIVE						
347 (Exclusion/Avoidance)	LR1.1 LR1.2	X	X	Manage the BCNM as a SUA and ROW avoidance area. Per BLM Manual 6330, no new ROWs within the WSA will be approved for uses that do not satisfy the non-impairment standard.	Manage the BCNM as an SUA and ROW exclusion area (including communication sites) for new ROW or SUA authorizations. Per BLM Manual 6330, no new ROWs within the WSA will be approved for uses that do not satisfy the non-impairment standard.	Same as Alternative A.
348 (New ROWs)	LR1.1 LR1.2	X	X	When processing a new ROW or SUA application, consider siting, stipulations, BMPs, and other mitigation measures to the greatest extent possible through the NEPA process to eliminate or minimize adverse impacts.	No similar action.	Same as Alternative A.

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
349 (ROW)	LR1.1 LR1.2	X		Minor ROWs and SUAs will be authorized only when stipulations are present to protect the BCNM ROVs. Locate new ROWs or SUAs within or near existing ROWs or SUAs to the greatest extent possible.	No similar action.	Same as Alternative A.
350 (Filming)	LR1.1	X	X	Authorize commercial filming throughout the BCNM after site-specific NEPA analysis is completed under 43 CFR 2920. If the proposal is within the WSA, it must meet the non-impairment standard or one of the exceptions for WSAs per BLM Manual 6330. Commercial filming permits must stipulate that if the WSA is designated as a wilderness, the permit will be terminated.	Exclude commercial filming authorization in the Browns Canyon WSA (7,463 acres). If the proposal is within the WSA, it must meet the non-impairment standard or one of the exceptions for WSAs per BLM Manual 6330. Commercial filming may be permitted under 43 CFR 2920 and 36 CFR 251 Special Uses, USFS directives (FSM 2720 and FSM 2709.11) and subject to monument ROV protections. Commercial filming permits must stipulate that if the WSA is designated as wilderness, the permit will be terminated.	Authorize commercial filming via the appropriate agency throughout the BCNM if the project is limited to existing highways and pullouts; designated routes, roads, and trails; river surface; and previously disturbed or cleared areas. If the proposal is within the WSA, it must meet the non-impairment standard or one of the exceptions for WSAs per BLM Manual 6330. Commercial filming may be permitted under 43 CFR 2920 and 36 CFR 251 Special Uses, USFS directives (FSM 2720 and FSM 2709.11) and subject to monument ROV protections. Commercial filming permits must stipulate that if the WSA is designated as wilderness, the permit will be terminated.
351 (Unmanned Aircraft Systems [UASs])	LR1.1	X	X	The BLM Lands & Realty program currently follows all Federal Aviation Administration regulations.	Casual-use landing and takeoff of UASs would not be allowed anywhere in the BCNM.	Casual-use landing and takeoff of UASs would not be allowed in the following areas in the BCNM:

2.0 Alternatives

Record #	OBJ	BLM	USFS	Alternative A (Current Management)	Alternative B	Alternative C
				Follow FSM 2720 and Forest Service Handbook 2709.11 Chapter 30 and 40 amendments for commercial filming and still photography.	Use of UASs for administrative use, permitted use, or special activity use would be analyzed on a case-by-case basis.	<ul style="list-style-type: none"> • BLM WSA. • Developed recreation areas. Use of UASs for administrative use, permitted use, or special activity use would be analyzed on a case-by-case basis.

Table Acronyms: BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, BMP=best management practice, CFR=Code of Federal Regulations, FSM=U.S. Forest Service Manual, N/A=not applicable, NEPA=National Environmental Policy Act, OBJ=objective, RGRMP=Royal Gorge Resource Management Plan, ROV=resources, objects, and values, ROW=right-of-way, R&PP=recreation and public purpose, SUA=Special Use Authorization, UAS=Unmanned Aircraft System, USFS=U.S. Forest Service, WSA=Wilderness Study Area

2.4 Recreation Management of BCNM Gateway Lands

The allowable uses and management actions (BLM)/ standards (USFS) described for each alternative in Table 2.3-1 through Table 2.3-12 only apply to lands within the 21,604-acre BCNM boundary (i.e., decision area). Many scoping comments addressed recreation uses in gateway areas adjacent to the monument boundary (for example, Aspen Ridge Road which lies 100 feet east of the boundary) that are outside the decision area for this RMP.

Scoping comments on BLM lands outside of the BCNM boundary, such as the Ruby Mountain gateway (County/BLM Road 300) and Hecla gateway (County/BLM roads 194, 5611, and 5613) approaching the boundary, will be addressed in the ongoing Draft Eastern Colorado RMP/EIS.

Management of USFS lands outside the BCNM boundary are subject to the “Pike and San Isabel National Forests; Cimarron and Comanche National Grasslands Land and Resource Management Plan” (USFS 1984), portions of which lie within the Aspen Ridge Roadless Area. Table 2.4-1 and Appendix D, Map 5 (Existing USFS Management Areas) address recreation-related scoping comments on USFS lands outside the monument boundary. USFS guidance in Table 2.4-1 would apply to proposed implementation projects that would be subject to subsequent, site-specific USFS NEPA analysis. Because these uses are currently allowed within existing USFS Management Areas 2B, 4D, 5B, and 6B, the guidance is not analyzed in this EIS, does not constitute an amendment to the Forest Plan, and is not subject to protest. Additionally, USFS Management Area 4B exists in a small area within the monument; however, no comments were identified specifically for that area. The following information is provided as context for on-going management of USFS-administered lands outside of BCNM, consistent with the current PSICC Forest Plan.

Table 2.4-1. USFS Recreation Guidance for Adjacent BCNM Gateway Lands

USFS Management Area Prescription (General Location Outside of BCNM)	Forest Plan Direction for Recreation (USFS 1984)	Recreation Guidance for Future USFS Implementation-Level Projects (BLM and USFS 2019b – Scoping Report)
2B: Rural and Roaded-Natural Recreation Opportunities (Railroad Gulch-Austin Trail Gateway, Turret Road Gateway)	Rural and roaded-natural recreation opportunities. Motorized and non-motorized recreation activities such as driving for pleasure, viewing scenery, picnicking, fishing, snowmobiling, and cross-country skiing are possible. Conventional use of highway-type vehicles is provided for in design and construction of facilities. Motorized travel may be prohibited or restricted to designated routes, to protect physical and biological resources. Enhance or provide more viewing opportunities. Manage recreation use to provide moderate to high incidence of contact with other groups and individuals.	Consistent with Colorado USFS Roadless Rule, consider projects such as: <ul style="list-style-type: none"> • Development and designation of new trailheads and trails for hiking, bicycling, and equestrian use. • Development of Americans with Disabilities Act (ADA)/ABA-compliant trails to scenic overlooks and interpretive opportunities. • Development of signs and kiosks for navigation and interpretation purposes. • Encourage development of private sector recreation services • Permit special uses which are complementary and compatible with adjacent BCNM ROVs. • Development of designated dispersed camping sites. • Development of areas for parking and turnaround.

USFS Management Area Prescription (General Location Outside of BCNM)	Forest Plan Direction for Recreation (USFS 1984)	Recreation Guidance for Future USFS Implementation-Level Projects (BLM and USFS 2019b – Scoping Report)
4D: Aspen Management (Aspen Ridge Corridor [National Forest System Road (NFSR) 185])	Recreational opportunities available are semi-primitive non-motorized and motorized or roaded natural. Some temporary or seasonal road and area use restrictions are implemented to prevent disturbance of wildlife or improve hunting and fishing quality. Management activities in foreground and middleground are dominant, but harmonize and blend with the natural setting. Prohibit development of new developed recreation sites. Prohibit motorized vehicle use off of National Forest System roads (NFSRs) and trails (NFSTs).	Consider projects such as: <ul style="list-style-type: none"> • Development and designation of new trails (including ADA/ABA-compliant trails) for hiking, bicycling, and equestrian use. • Development of signs and kiosks for navigation and interpretation purposes. • Development of designated dispersed camping sites. • Development of areas for parking and turnaround.
5B: Big Game Winter Range (Turret Road [NFSR 184] Gateway)	New roads other than short-term temporary roads are located outside of the management area. Short-term roads are obliterated within one season after intended use. Existing local roads are closed and new motorized recreation use is managed to prevent unacceptable stress on big game animals during the primary big game use season. Design, construct, and operate only those developed sites which are needed to meet summer season management objectives. Close all developed sites during the winter management season.	Consistent with Colorado USFS Roadless Rule and seasonal restrictions (i.e., summer use only), consider projects such as: <ul style="list-style-type: none"> • Development and designation of new trailheads along NFSR 184 and trails for hiking, bicycling, and equestrian use. • Development of ADA-compliant trails to scenic overlooks and interpretive opportunities. • Development of signs and kiosks for navigation and interpretation purposes. • Development of designated dispersed camping sites. • Development of areas for parking and turnaround.
6B: Livestock Grazing (Aspen Ridge Corridor [NFSR 185])	Dispersed recreational opportunities vary between semi-primitive non-motorized and roaded natural.	Consistent with Colorado USFS Roadless Rule consider projects such as: <ul style="list-style-type: none"> • Development and designation of new trailheads and trails for hiking, bicycling, and equestrian use. • Development of ADA-compliant trails to scenic overlooks and interpretive opportunities. • Development of signs and kiosks for navigation and interpretation purposes. • Development of designated dispersed camping sites. • Development of areas for parking and turnaround.

Table Acronyms: ABA=Architectural Barriers Act, ADA=Americans with Disabilities Act, BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, NFSR=National Forest System road, NFST=National Forest System trail, ROV=resources, objects, and values, USFS=U.S. Forest Service

2.5 Alternatives Considered but Not Analyzed in Detail

The BLM and USFS evaluated all reasonable alternatives. The following list describes the alternatives considered but eliminated from detailed analysis and the rationale for their elimination.

2.5.1 Close Any or All of the Decision Area to Livestock Grazing

The BLM and USFS eliminated from detailed analysis an alternative that would close BLM- and USFS-administered surface lands to livestock grazing. Chaffee County identifies livestock grazing as a significant economic contributor and land use within the county (Chaffee County 2017). Closure to grazing is not the only available mechanism to reduce grazing-related impacts and the current range of alternatives includes various management actions that represent adequate methods to addressing grazing-related impacts. Members of the public expressed concerns about livestock grazing (BLM and USFS 2019b) in some localized areas, and a management action to allow for adjustment to BLM range allotment management categories to the “Maintain” and “Improve” categories in order to meet monument objectives has been incorporated into alternatives. Also, if monitoring shows an adjustment is needed, then implementation-level management changes can be made in coordination with the permittees and interested public. Such actions can include adjusting animal unit months (AUMs), changing the season or length of grazing use, and adjusting grazing management practices. Permit terms and conditions could also be modified. The BLM and USFS identified no issue or conflict that could only be resolved through the elimination of livestock grazing, and determined that managing for monument ROVs can occur through implementation-stage management, including avoidance and minimization, without the complete elimination of livestock grazing within any or all of the decision area.

2.5.2 Designate BCNM as an ERMA with RMZs in Small Targeted Areas

The BLM land use planning process administratively designates recreation management areas, including special recreation management areas (SRMAs), extensive recreation management areas (ERMAs), and recreation management zones (RMZs). In developing alternatives, the IDT considered various options for delineating SRMAs, ERMAs, and RMZs across the BCNM landscape according to “BLM Handbook 8320-1 Planning for Recreation and Visitor Services.”

Designating the entire BCNM as an ERMA to support and sustain recreation activities commensurate with the management of other resources and resource uses, with designations of RMZs in smaller targeted areas was considered but dismissed because it was determined that management of an ERMA would not be effective in meeting recreation goals and objectives or protection of other ROVs.

2.5.3 Designate BCNM as a SRMA

Designation of the entire monument as a SRMA to recognize recreation and visitor services as the predominant land use plan focus was considered but dismissed given: 1) equivalent protection and enhancement of recreation activities, experiences, benefits afforded by other overlapping designations, allocations, and agreements, and 2) the relatively small planning area. Presidential Proclamation 9232 states that BCNM “provides world class river rafting and outdoor recreation opportunities, including hunting, fishing, hiking, camping, mountain biking, and horseback riding” and directs the BLM and USFS to manage recreation within the monument as summarized in the Planning Assessment (BLM and USFS 2018a). Furthermore, the “Arkansas Headwaters Recreation Area Final Management Plan / Environmental Assessment,” including the “Cooperative Management Agreement” (AHRA Management Plan, CPW et al. 2019) highlight and detail management for use of the river and the two principle river-recreation areas

within BCNM, Ruby Mountain and Hecla Junction. Therefore, designating and managing the BCNM as a SRMA is substantially similar in design to managing the monument with MZs under alternatives B and C and was determined to have similar beneficial effects to the recreation and visitor services program reflected in alternatives considered in this document.

2.5.4 Restrictions on Recreational Use Levels, No Additional Site Development

The BLM and USFS considered an alternative that would not allow additional recreation site development or access improvements and place limits on non-river recreational use levels (as described later in Section 3.11 “Recreation,” the AHRA Management Plan establishes boating capacity on the Arkansas River through BCNM). Management actions for this alternative included managing the entire BCNM similar to a wilderness area or as a primitive recreational setting.

This alternative was eliminated from detailed analysis for several reasons: First, it would not meet the purpose and need stated above to accomplish multiple-use and sustained yield mandates and the intent of Presidential Proclamation 9232 to manage for the protection of monument ROVs. Second, BCNM is an extremely popular recreation area, and long-term trends suggest demand for such use is likely to increase in concert with projected population growth in Colorado and the surrounding area. The State is expected to add more than 2 million new residents between 2015 and 2035, increasing its population to nearly 7.5 million (a roughly 40 percent increase). Third, the 2017 “Social Landscape Assessment of Browns Canyon National Monument” (Social Landscape Assessment; Bartlett 2017) and public scoping identified strong community desires for adequate and ample facilities to manage high-density areas, and recommendations for expanding and improving trails and river facilities.

Given this current and forecasted demand, BLM and USFS determined it was unrealistic to consider a detailed alternative with no to substantially lower visitor infrastructure or recreational use levels. Suppressing use levels would have major negative economic impacts on the State and local economy and reduce the diversity of opportunities. Further, limiting infrastructure to this degree would also potentially lead to more resource damage (e.g., not installing restrooms could lead to water quality impacts, social trails, and other nuisances). Scoping suggested there was little public support for these kinds of reductions. This alternative was therefore not carried forward for detailed analysis.

2.5.5 Citizens’ “Sustainable Alternative”

The BLM and USFS considered all input from the public and cooperating agencies regarding potential alternatives, including an alternative presented by the Friends of Browns Canyon and a coalition of stakeholders (BLM and USFS 2019b; comment letter 80), described as the “Sustainable Alternative Proposed for Management of Browns Canyon National Monument.” This alternative would have included MZs and objectives and recommendations for cultural resources, biological resources, wilderness characteristics, special designations, visual resources, vegetation, wildlife, maintaining and managing recreation, and the route network. This proposal was considered but not analyzed in detail as a wholly separate alternative because it was substantially similar to one or more of the other alternatives. As described in Section 2.2

“Summary of Alternatives,” the BLM and USFS considered this proposal when refining the preliminary alternatives described in the Planning Criteria Report.

2.6 Summary of Environmental Consequences by Alternative

A comparison of the potential environmental consequences from implementing the management alternatives is summarized in Table 2.6-1. The summary comparison highlights the substantial differences between the alternatives in regard to how they resolve planning issues (40 CFR 1502.14). Chapter 3 of the RMP/EIS provides a detailed impact analysis by resource and resource use.

Table 2.6-1. Summary of Environmental Consequences

	Alternative A	Alternative B	Alternative C
<i>Special Designations (Section 3.2)</i>			
Wilderness and WSA Decisions	Similar to Alternative B but to a lesser extent because less management actions place restrictions within the WSA, beyond what is required by BLM Manual 6330.	Goals and objectives throughout Alternative B would provide similar protection to the Browns Canyon WSA resulting in the greatest likelihood of reducing potential adverse impacts on the WSA.	Similar impacts to Alternative B, though Alternative C could conceivably vary impacts to WSA character given differences in wilderness characteristics and MZ allowances.
Roadless Area Decisions	The Aspen Ridge Colorado Roadless Area (CRA) (11,185 acres) would continue to be managed in accordance with the 2012 Colorado Roadless Rule (36 CFR 294.43(c)(1)(ix)) to protect its roadless character.	Similar impacts to Alternative A.	Similar impacts to Alternative A.
ACEC Decisions	The Browns Canyon ACEC (9,755 acres) would be maintained and would be managed to protect and enhance its identified R&I values.	Similar impacts to Alternative A, with greater beneficial effects as Alternative B would manage the Browns Canyon ACEC in conformance monument RMP plan goals, objectives, and policies.	The Browns Canyon ACEC would not be maintained. However, the identified R&I values would benefit from equivalent protections under Presidential Proclamation 9232 as ROVs in conformance with monument RMP plan goals and objectives.
Arkansas River Recreational Decisions	Under Proclamation 9232, the Arkansas River Segment 2's outstandingly remarkable values are also identified as ROVs in Proclamation 9232 and would benefit from substantially equivalent protection as Alternative B.	Similar impacts to Alternative A, though to a greater degree as Alternative B would determine Segment 2 to be eligible and suitable and apply interim protection measures.	Similar to Alternative A, though MZ designations in the Arkansas River Shore and Bench would help further retain the segment's outstandingly remarkable values.

	Alternative A	Alternative B	Alternative C
<i>Air Quality (Section 3.3)</i>			
Motorized vehicle use	Motorized vehicle use could impact air quality and Air Quality Related Values (AQRVs) through pollutant emissions. Increased recreational visitation to BCNM could increase impacts. Impacts would generally be negligible due to prohibitions on new road development, the application of BMPs, and the regional nature of air quality and AQRV impacts.	Similar impacts as Alternative A, though greater beneficial effects as Alternative B applies restrictions to dispersed camping in specific MZs.	Similar impacts as Alternative B, though less beneficial effects as Alternative C allows for dispersed camping in specific MZs.
Fire	Wildfire and prescribed fire could impact air quality and AQRVs as wood burning releases pollutant emissions and smoke. Prescribed fires may result in short term impacts from more frequent wood burning.	Potential beneficial impacts would be similar to Alternative A, but to a lesser degree as Alternative B prioritizes natural ignitions.	Similar beneficial impacts as Alternative A, as Alternative C allows use of all available fuel load management techniques.
<i>Cultural Heritage, Tribal Values and Uses (Section 3.4)</i>			
Disturbance	Increased access to remote areas through recreational land use can result in adverse impacts because of the associated increase in human activity, which may lead to a greater potential for illegal artifact collection, vandalism, erosion, and trampling. Beneficial impacts on cultural resources would result from management decisions that restrict surface-disturbing activities, close or limit travel and access, or establish special designation areas.	Similar to Alternative A. Management actions would allow for interpretive development of cultural resources within the monument and within designated trail systems.	Similar to Alternative B but to a potentially greater extent of adverse impacts because Alternative C does not increase BMPs for restoration, stabilization, and protection of cultural resources.
<i>Geology, Minerals and Paleontology (Section 3.5)</i>			
Recreation and Public Use	Alternative A provides limited proactive management for addressing impacts from recreational use in the monument	Management actions could reduce the potential for recreation effects on sensitive geological features due to their proactive approaches to recreation management.	Similar to Alternative B.

	Alternative A	Alternative B	Alternative C
Mineral Collection	Prohibit collection of monument resources and objects, in accordance with Presidential Proclamation 9232.	Same as Alternative A, but if Congress enacts legislation authorizing collection of minerals, the agencies would promulgate regulations governing noncommercial collection activities, consistent with the Congressional directive, potentially resulting in greater access to the resource at specific locations and dates, which would benefit stakeholders who value opportunities for mineral collection at that site.	Similar to Alternative B, but if Congress enacts legislation authorizing collection of minerals, the agencies would promulgate regulations governing noncommercial collection activities, consistent with the Congressional directive, which would benefit stakeholders who value opportunities for mineral collection throughout the Monument.
<i>Lands with Wilderness Characteristics (Section 3.6)</i>			
Lands with Wilderness Characteristics Decisions	No action would be taken to manage lands with wilderness characteristics.	Wilderness characteristics would be protected in the Railroad Gulch (537 acres) and the Browns Canyon North-Ruby Mountain (88 acres) inventoried units.	Wilderness characteristics would not be directly protected but could be maintained due to other management prescriptions addressing other resource values.
Vegetation Management Decisions	No action would be taken to manage vegetation to protect or maintain wilderness characteristics.	Vegetation management would include a design to reduce fuel loads, maintain or improve vegetation health and function, control the spread of noxious weeds and invasive species, and reduce the potential for uncharacteristic wildfires and large-scale alterations to vegetation patterns.	Similar to Alternative A.
Wildfire Management Decisions	No wildfire management decisions would be made to protect or maintain wilderness characteristics.	BLM would manage wildfires using minimum impact suppression tactics to limit impacts on wilderness characteristics to the greatest extent possible.	Similar to Alternative A.
Recreation and Permitting Decisions	No recreation or permitting management decisions would be made to protect or maintain wilderness characteristics.	Imposes the most limitations on recreation to maintain primitive and unconfined types of recreation settings. SRPs in the two units would only be issued if it can be demonstrated that wilderness characteristics would not be impacted, prohibiting competitive events, reviewing and adjusting current outfitting guiding levels, and limiting signage so that it is of primitive character to be consistent with the surrounding areas.	Similar to Alternative A.

	Alternative A	Alternative B	Alternative C
<i>Vegetation, Wildland Fire Ecology and Fuels (Section 3.7)</i>			
Noxious weeds, invasive plant species, and pests and diseases	Limiting the ability to implement the full range of available management to treat noxious weeds, invasive plant species, and pests under Alternative A would reduce short-term surface disturbance of vegetation communities during treatment, but could result in long-term impacts if infestations spread.	Potential impacts would be similar to those of Alternative A, but to a greater degree. Alternative B only allows vegetation treatments in limited circumstances but would not allow the use of machinery, limiting methods for their control (and response to disease and pest outbreaks) if infestations spread. Prohibiting aerial application of herbicide would preclude treatment of elongated mustard, which is a List A (eradication) species in the state of Colorado. Because this species grows in steep, rocky cliffs, aerial application is the only known effective method for control. Alternative B would also generally increase other protection measures that would reduce potential spread of noxious species in BCNM compared to other alternatives.	Greater potential for short-term impacts (establishment and spread of noxious weeds and invasive plant species) compared to Alternative B by allowing more public access. Greater potential for the long-term control of noxious weeds, invasive plant species, and pest and disease infestations due to implementation of a full range of vegetation treatment options.
Monument objects	Increasing public access and recreational use could result in impacts on vegetation biodiversity, as well as special status plant species from the direct removal of vegetation, or habitat alterations in areas supporting these vegetative communities.	Same as Alternative A but fewer impacts due to more limitations on public access and avoiding surface-disturbing activities within 250 feet of intermittent and perennial streams, rivers, riparian areas, wetlands, and springs. Alternative B would also allow limits on group size and closure and rehabilitation of undesignated social routes and prohibit new trails in the River East MZ, and prohibit dispersed camping in the Arkansas River Shore and Passage MZ, resulting in the greatest protection of riparian vegetation.	Greater potential impacts on vegetation biodiversity and sensitive plant communities than Alternative B by allowing more public access and trail development, and not avoiding new trail development near sensitive plant species.
Fire and fuels management	No change in the potential for impacts from wildfire, continued emphasis on natural processes and prescribed fire treatments.	Similar to Alternative A, but greater potential for impacts from wildfire because of a greater emphasis on natural processes to manage fuel loads, including not allowing mechanical vegetation treatments or prescribed burns.	Allows for the greatest suite of treatment techniques (including prescribed fire and mechanical treatments) and emphasizes reductions in fuel loading. Alternative C would result in a lower risk of adverse impacts from wildfire.

	Alternative A	Alternative B	Alternative C
Visual Resources, Night Skies, and Natural Soundscapes (Section 3.8)			
VRM/SIO Classes	VRM I/SIO Very High: 0 acres/0 acres (Per the 1996 RGRMP, WSAs are now managed by BLM Manual 6330 as VRM Class I.) VRM II/SIO High: 9,272 acres/0 acres VRM III/SIO Moderate: 521 acres/ 62 acres VRM IV/SIO Low: 0 acres/11,750 acres (Map 6) Alternative A provides the least protection to scenic resources of the alternatives.	VRM I/SIO Very High: 8,922 acres/11,069 acres VRM II/SIO High: 429 acres/743 acres VRM III/SIO Moderate: 323 acres/0 acres VRM IV/SIO Low: 119 acres/0 acres (Map 7) Alternative B provides the highest level of protection to scenic resources of the alternatives.	VRM I/SIO Very High: 7,457 acres/9,802 acres VRM II/SIO High: 1,601 acres/1,718 acres VRM III/SIO Moderate: 548 acres/292 acres VRM IV/SIO Low: 187 acres/0 acres (Map 8) Similar to Alternative B but somewhat less protection of scenic resources.
Monument Objects	No major developments are planned within the monument under any of the alternatives. Short- and long-term, indirect, adverse impacts that could result from resource uses and activities, including route proliferation associated with cross-country OHV travel or the development of roads, prescribed fire, vegetation management, and structural and non-structural range improvements.	Similar to Alternative A.	Similar to Alternative A.
Night Skies	Impacts on dark night skies is driven by the degree of use restrictions and level of recreation facility development and OHV use. These impacts are expected to be minimal.	Alternative B would have lower impacts by working in partnership with local communities, universities, other agencies, and stakeholders to measure soundscapes and light pollution and implement BMPs.	Same as Alternative A.
Soundscapes	Impacts on natural soundscapes are driven by the degree to which the BLM authorizes activities that would result in an increase of intrusive sounds, including surface uses. These impacts are expected to be minimal.	Similar to Alternative A but to a lesser extent due to protective restrictions applied to the management of other resources and special designations.	Similar to Alternative B.
Watersheds, Soils, and Water Resources (Section 3.9)			
Erosion and sediment loading	Adverse impacts may result from a variety of resource programs including management for water resources, vegetation and fuel	Same as Alternative A, but to a lesser degree through avoidance of surface-disturbing activities in floodplains and near waterbodies. However, less aggressive	Same as Alternative A, but to a greater degree by allowing more public access and surface disturbance within floodplains and near

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	Alternative A	Alternative B	Alternative C
	management treatments, and recreation management.	prevention efforts would result in higher risk of adverse impacts on watersheds from wildfire.	waterbodies. Greatest opportunity to limit potential adverse impacts from wildfires. However, designed constructed trails would concentrate use on system trails, preventing unauthorized routes that cause impacts to the watershed.
Wildlife and Fish (Section 3.10)			
Fish and aquatic species including monument objects	Similar to “Watersheds, Soils, and Water Resources” above, for Alternative A.	Similar to “Watersheds, Soils, and Water Resources” above, for Alternative B.	Similar to “Watersheds, Soils, and Water Resources” above, for Alternative C.
Avian and terrestrial species including monument objects	Increasing public access and recreational use could result in impacts on avian and terrestrial species, including special status species from habitat degradation and human disturbance. In general, due to BCNM’s status and associated restrictions on resource uses and surface disturbance, impacts to wildlife species would be limited. Mitigation, including appropriate BMPs, would be allowed to minimize impacts, and seasonal use restrictions would be implemented to avoid human activities during sensitive time periods for migratory birds, raptors, and big game species.	Potential impacts would be similar to those of Alternative A, but to a lesser degree. Alternative B applies more seasonal use restrictions on human activities in sensitive habitat and does not allow new trail development in big game winter range.	Potential impacts would be similar to those of Alternative A, but to a greater degree. Alternative C applies fewer seasonal use restrictions on human activities in sensitive habitat and allows new trail development in big game winter range.
Recreation (Section 3.11)			
Visitor Experience	Alternative A does not anticipate and proactively prepare for future visitation and population growth resulting in an adverse impact to desired recreation settings and experiences, as well as other monument ROVs.	Alternative B defines MZs across the BCNM, resulting in a beneficial impact on natural and biological uses and recreation users seeking solitude and primitive opportunities. More MZ acres would be established with a primitive versus backcountry focus.	Similar to Alternative B. Alternative C would generally allow for more recreation infrastructure such as trails, trailheads, parking facilities, dispersed camping, and/or campgrounds, which would have a beneficial effect on visitors seeking those type of recreation experiences and settings.
Visitor health and safety,	No actions would be taken to enhance visitor health and safety. Increasing human and pet use within the Arkansas	Alternative B would have the greatest beneficial impact to human health and safety by limiting target shooting and	Similar to Alternative B but to a lesser extent. Alternative C allows target shooting in certain areas.

	Alternative A	Alternative B	Alternative C
water contamination	River corridor increases the potential for surface water contamination.	managing density. Implementation of an education program to encourage proper human and pet waste, and requirements for the collection/disposal of waste in certain locations with the ability to expand required locations to address degradation, would decrease the potential for water quality impacts, compared to Alternative A.	Alternative C would have greater potential to decrease human and pet waste related water quality impacts due to additional location where waste collection/disposal are required, and additional evaluation criteria that could be used to expand required locations.
Travel and Transportation Management (Section 3.12)			
OHV area designations	The majority of the area would be designated as limited to existing routes. Consistent with Presidential Proclamation 9232, new motorized trails are allowed only west of the Arkansas River and at the Ruby Mountain Recreation Site and only when necessary to provide reasonable river or campground access. Users seeking more motorized access to the monument would be adversely affected. OHV Open: 0 acres OHV Limited: 14,141 acres OHV Closed: 7,463 acres	Similar impacts to Alternative A; however, implementation of Alternative B would result in more impacts to access since it focuses more on protecting monument resources through seasonal restrictions and other measures. OHV Open: 0 acres OHV Limited: 14,141 acres OHV Closed: 7,463 acres	Similar impacts to Alternative A. OHV Open: 0 acres OHV Limited: 14,141 acres OHV Closed: 7,463 acres
Range and Livestock Grazing (Section 3.13)			
Range Improvement Decisions	No new actions would be taken to manage or maintain range and livestock grazing.	Beneficial impacts from the ability to adjust BLM Range allotment management categories to maintain and improve categories in order to meet monument objectives and removal or upgrades to existing structural and nonstructural range improvements in order to maintain and manage range and livestock grazing.	Similar impacts to Alternative B.
Lands and Realty (Section 3.14)			
Valid Existing Rights	Allow for some amount of land use authorizations such as grants, leases, permits, or easements in a manner that protects BCNM ROVs.	Similar impacts to Alternative A.	Similar impacts to Alternative A.

	Alternative A	Alternative B	Alternative C
Trespassing	Require efforts to identify, manage, and resolve trespasses and other unauthorized uses.	Similar impacts to Alternative A.	Similar impacts to Alternative A.
Recreation and Public Purpose Leases	Additional recreation and public purpose (R&PP) leases would be issued within the cooperative management agreement area under the restriction that the criteria outlined in the Royal Gorge Field Office RMP.	No additional R&PP leases would be issued within the cooperative management agreement area.	Similar impacts to Alternative B.
Rights-of-Way	Manage lands within the BCNM as avoidance areas.	Manage the monument as an exclusion area.	Similar impacts to Alternative A.
Commercial Filming	Commercial filming would continue to be allowed throughout the monument. Proposals within the Browns Canyon WSA would be required to meet BLM Manual 6330 standards.	Exclude commercial filming in the Browns Canyon WSA	Authorize commercial filming throughout the BCNM and would limit the activity to existing highways and pullouts; designated routes, roads, and trails; and previously disturbed or cleared areas.
Unmanned Aircraft Systems	UASs would be allowed in the monument subject to Federal Aviation Administration and Forest Service Handbook 2709 regulations.	Casual-use land and takeoff would not be allowed anywhere within BLM-administered lands and would only be allowed for administrative use on a case-by-case basis.	Restrict casual-use land and takeoff in the Browns Canyon WSA as well as BLM and CPW leased developed recreation areas. Similar to Alternative B, the use of UASs for administrative purposes would be allowed on a case-by-case basis.
Social and Economic Conditions (Section 3.15)			
Social Conditions	Highest potential for conflicts between wildlife and resource conservation stakeholders due to lack of specific direction from the continuation of current management.	Highest potential to reduce conflicts between users and wildlife species and impacts to wildlife habitat. Highest potential to increase the beneficial effects to stakeholders with an interest in remote habitat and solitary activities.	Highest potential to negatively impact wildlife and resource conservation stakeholders due to the focus on front and middle country management and promotion of associated infrastructure resulting in greater adverse impacts to resource conservation and wildlife species and habitats.
Economic Conditions	Market values associated with livestock grazing and recreation would be relatively unchanged resulting in a low potential to increase local employment and promote	Market values associated with livestock grazing and recreation would be relatively unchanged resulting in a low potential to increase local employment and promote continued economic activity for local residents.	High potential to maintain market value associated with livestock grazing. Highest potential to increase market value associated with recreation due to the focus on middle and front

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	Alternative A	Alternative B	Alternative C
	continued economic activity for local residents.		country settings and infrastructure.
Nonmarket Values	Low potential to increase non-use values and ecosystem services if current management is unable to prevent degradation of ecosystem or resource conditions.	Highest potential to maintain or increase non-use values and ecosystem services due to the emphasis on protection of monument resources and limits on future recreational infrastructure development.	High potential to maintain or increase non-use values due to management protections for monument ROVs.

Table Acronyms: ACEC=Area of Critical Environmental Concern, AQRV=Air Quality Related Value, BCNM=Browns Canyon National Monument, BLM=Bureau of Land Management, BMP=best management practice, CFR=Code of Federal Regulations, CPW=Colorado Parks and Wildlife, CRA=Colorado Roadless Area, MZ=management zone, NWSRS=National Wild and Scenic Rivers System, OHV=off-highway vehicle, RGRMP=Royal Gorge Resource Area Resource Management Plan, RMP=resource management plan, R&I=relevant and important, R&PP=recreation and public purpose, ROV=resources, objects, and values, SIO=Scenic Integrity Objectives, SRP=Special Recreation Permit, UAS=Unmanned Aircraft System, VRM=Visual Resource Management, WSA=Wilderness Study Area

3.0 AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected environment and environmental consequences organized by special designations, resources, resource uses, and social and economic conditions applicable to the analysis area. The geographic context and extent of the BCNM analysis area varies for specific ROVs based on current management, agency understanding of conditions and trends, USFS need for change, and BLM management opportunities, all as described in the Planning Assessment (BLM and USFS 2018a). The BLM and USFS describe the BCNM analysis area for each ROV to best analyze the environmental consequence of management goals, objectives, and resource use allowances proposed in the alternatives (see Chapter 2).

The affected environment and environmental consequences discussions have been combined in this chapter to provide a concise and clear understanding of existing resources and the alternatives' impacts on them. The affected environment descriptions are not exhaustive discussions but rather summarize the baseline conditions that may be affected by the alternatives in Chapter 2. The conditions and trends, BASI, and stressors and drivers affecting ROVs can be found in the Planning Assessment (BLM and USFS 2018a). These findings are incorporated herein and serve as the foundation for the affected environment descriptions. Since publication of the Planning Assessment, new BASI has been added to the affected environment as a result of scoping and review of the planning criteria and analysis issues where appropriate.

3.1 Analytical Assumptions

The environmental consequences sections estimate the impacts to the baseline conditions that may result from implementing the alternatives described in Chapter 2, including the no action alternative. The basis for analysis methodologies in the Planning Criteria Report is incorporated by reference and was modified through a review of analysis issues, unless stated otherwise in the Methods and Assumptions section in each resource section (BLM and USFS 2019a). The following types of impacts are included in the evaluation of environmental consequences (Table 3.1-1):

Table 3.1-1. Impacts Evaluated for Environmental Consequence

Impacts	Consequence
Direct and Indirect	Direct and indirect impacts result from activities that generally occur at the same time and place as the management activity; indirect impacts may occur at some distance (e.g., miles) or time (e.g., days or years) from the management activity or action. Beneficial and/or adverse.
Short- or Long-term	When applicable, the short- or long-term aspects of impacts are described. For purposes of this EIS, short-term impacts occur during or after the management activity or action and may continue for up to five years. Long-term impacts occur beyond the first five years.
Cumulative	Effects on the affected environment resulting from the incremental impact of the alternatives, when added to other past, present, and reasonably foreseeable actions and trends. Where no cumulative effects have been identified, such is noted.

Table Acronyms: EIS=Environmental Impact Statement

Direct, indirect, short-term, and long-term impacts are discussed in the environmental consequences sections under each resource. The impacts of past, present, and reasonably

foreseeable future actions and trends are described in the cumulative effects narrative; some past and present actions and trends are also described in the affected environment discussions for each resource section. For the cumulative effects analysis, unless otherwise stated, the spatial scale is the analysis area and the temporal scale is the planning horizon of 20 years into the future. Refer to Appendix J (Cumulative Impact Methodology and Past, Present, and Reasonably Foreseeable Future Actions) for a list of past, present, and future projects that could result in cumulative effects with the alternatives.

The management actions and land use allocations presented in the alternatives are programmatic in nature. Therefore the NEPA analysis in this chapter addresses general environmental issues relating to broad decisions and frames the scope of subsequent site- and project-specific Federal actions. Assumptions common to all alternatives and all resources are listed in Table 3.1-2, whereas assumptions unique to specific resources and resource uses are listed under the Methods and Assumptions section in each resource section.

Table 3.1-2. Assumptions Common to All

Topic	Assumptions
Key Issues Focus	Environmental consequences descriptions focus on the planning issues (see Section 1.4.2) in order to streamline the analysis in accordance with Secretarial Order 3355 and to highlight the key issues of concern for the public, the BLM, and cooperating agencies.
Impact Discussion	If a particular impact is not discussed for a given resource, it is either because no impacts are expected, the anticipated impact was not identified as a key issue at this programmatic scale of analysis, or there is no meaningful difference in impacts by alternative.
Effects Of Future Management Actions and Allowable Uses	The analysis of impacts focuses on the anticipated effects of future management actions and allowable uses proposed under each alternative. The effects of past and present actions are in the description of existing conditions (affected environment).
Standards, Monitoring, and BMPs Incorporated	The analysis incorporates and BLM and USFS will implement all applicable standard operating procedures, monitoring (see Chapter 4), and BMPs (see Appendix G, Best Management Practices).
Sufficient Funding and Personnel	Sufficient funding and personnel will be available to implement the selected alternative.

Table Acronyms: BLM=Bureau of Land Management, BMP=best management practice, USFS=U.S. Forest Service

To reduce redundancy and streamline the impact analysis, Table 3.1-3 is provided to summarize commonly cited allocation and resource use acreages that are likely to affect resources or resource programs.

Table 3.1-3. Summary of Allocations and Resource Use Acreages by Alternative

Resource Use	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)
ACECs	9,755	9,755	0
WSA	7,463	7,463	7,463
Roadless Area	11,162	11,162	11,162
Lands with Wilderness Characteristics	0	625	0
Visual Total (BLM/USFS Lands)	9,793/11,812	9,793/11,812	9,793/11,812
VRM I / SIO Very High	0* / 0	8,922 / 11,069	7,457 / 9,802

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Resource Use	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)
VRM II / SIO High	9,272 / 0	429 / 743	1,601 / 1,718
VRM III / SIO Moderate	521 / 62	323 / 0	548 / 292
VRM IV / SIO Low	0 / 11,750	119 / 0	187 / 0
Recreation Total⁺	21,604	21,604	21,603
Arkansas River SRMA	9,793	0	0
USFS Management Area 2B	61	0	0
USFS Management Area 4B	18	0	0
USFS Management Area 4D	387	0	0
USFS Management Area 5B	6,970	0	0
USFS Management Area 6B	4,376	0	0
Arkansas River Shore and Bench/ Passage	0	538 Primitive to Front Country	1,701 Primitive to Front Country
Monument - River East	0	19,542 Primitive	15,852 Primitive to Backcountry
Monument - River West	0	405 Backcountry	1,293 Backcountry to Middle Country
Aspen Ridge	0	475 Primitive to Backcountry	1,717 Backcountry to Middle Country
Railroad Gulch	0	257 Primitive	636 Primitive to Backcountry
Turret Road	0	268 Backcountry	292 Backcountry
Ruby Mountain - Hecla Junction Access	0	119 Front Country	112 Front Country
Travel Total	21,604	21,604	21,604
OHV Open	0	0	0
OHV Limited	14,141	14,141	14,141
OHV Closed	7,463	7,463	7,463
Available for Livestock Grazing	17,175	17,175	17,175
ROW Total	21,604	21,604	21,604
Exclusion	0	21,604	0
Avoidance	21,604	0	21,604

Table Acronyms: ACEC=Area of Critical Environmental Concern, BLM=Bureau of Land Management, OHV=Off-highway vehicle, ROW=right-of-way, SIO=Scenic Integrity Objectives, SRMA=Special Recreation Management Area, USFS=U.S. Forest Service, VRM=Visual Resource Management, WSA=Wilderness Study Area

⁺Total acreage discrepancies in this table are due to rounding.

*Per the 1996 RGRMP, WSAs are now managed by BLM Manual 6330 as VRM Class I.

3.2 Special Designations

3.2.1 Affected Environment

This section addresses the existing special designations within the BCNM: a BLM WSA, USFS Inventoried Roadless Areas, a BLM Area of Critical Environmental Concern (ACEC), and a BLM suitable Wild and Scenic River (WSR) segment. There are no scenic or historic byways, or national scenic or historic trails in the analysis area. The suitable WSR segment and Roadless Area extend beyond the BCNM boundary. However, the geographic area considered for characterizing conditions and trends for these special designations is restricted to the monument boundary. Refer to Chapter 2 of the Planning Assessment, Section 2.3 “Special Designations” (BLM and USFS 2018a:pp. 223–231) for information on each special designation.

Browns Canyon WSA: The Browns Canyon WSA contains 7,463 acres and is completely contained within the BCNM. Browns Canyon WSA ranges in elevation from about 7,400 feet above mean sea level (amsl) along the river to about 9,000 feet amsl near the eastern boundary. The area is very rugged and is dissected with drainages and gulches. The majority of the area’s vegetation cover is piñon pine with some ponderosa pine and Douglas-fir, along with a scattering of aspens, willows, and cottonwoods in some of the drainages. Where adjacent to the railroad, the WSA begins 100 feet east of the Denver & Rio Grande railroad and elsewhere, along the Arkansas River mean high water line (BLM 1991a and BLM 1991b).

The two main access points to the WSA by non-boating recreationists are via the Ruby Mountain Recreation Site, located at the northwest boundary of the WSA, and via USFS lands on the eastern boundary. Visitors to the WSA partake in recreational activities, which include horseback riding, rock climbing, hiking, backpacking, and hunting. The WSA’s relatively low elevation and proximity to a major highway also make it accessible for recreational activities during the winter seasons when nearby high-elevation wilderness areas cannot be reached by most potential users.

Although the Arkansas River is not inside the WSA, there is a prominent relationship between the river and the WSA due to its proximity and access. Current uses, including river rafting day-use and camping, have resulted in the creation of social trails and a reduction in the naturalness of the WSA.

The rugged topography and groupings of vegetation within the WSA create a variety of settings—ranging from canyons and gulches with enclosed, intimate qualities to open ridge tops with sweeping views of the Arkansas River valley and the Sawatch Mountain range, the highest group of peaks in the Rocky Mountains. Numerous rock spires located throughout the area make Browns Canyon WSA particularly scenic.

Inventoried Roadless Areas: Approximately 11,162 acres (95 percent) of USFS lands within the BCNM are designated as the Aspen Ridge Colorado Roadless Areas (CRA) unit. Together, the Browns Canyon WSA and Aspen Ridge CRA comprise approximately 87 percent of the acreage in the BCNM. Recreation opportunities in the Aspen Ridge CRA include horseback riding, rock climbing, hiking, wildlife viewing, hunting, and opportunities for solitude and scenic vistas.

The Aspen Ridge CRA has unique rock outcrops and canyon habitats for raptors such as falcons, eagles, hawks, and owls (USFS 2011). Per CPW, the Aspen Ridge CRA also contains important habitats for other wildlife species including black bear, bighorn sheep, elk, mountain lion, mule deer, Townsend’s big-eared bat, and woodpeckers (USFS 2011). Most of the Aspen Ridge CRA

shows little to no disturbance from human use. Livestock grazing does occur but is limited due to the scarcity of water. Additionally, there is evidence of historic mining.

Browns Canyon ACEC: The Browns Canyon ACEC was designated in the 1996 RGRMP and consists of 9,755 acres within the BCNM. The relevant and important (R&I) values of the ACEC include its scenic river canyon, unique naturalness character, primitive recreation, water-related recreation, scenic and visual qualities, wildlife habitat, and cultural resources. The lands are very important to the integrity and management of this canyon environment (BLM 1996). There has been no change in scenic, fauna, cultural and flora values since BLM's 1993 study and 1996 ACEC designation, with the exception of updated resource inventory and modeling, particularly of archeological resources, and areas important to Native Americans since 1996 (Appendix H). Informal use areas along the river have been monitored annually since 1996. While some sites have seen reductions in use and impacts are no longer evident, other sites continue to see regular and continuous use and their associated impacts. Refer to Appendix H for an updated evaluation of R&I value criteria of the ACEC in the BCNM.

Arkansas River Recreational WSR: WSR analysis for the Arkansas River was completed during the BLM's 1996 RGRMP process in 1993 and updated as part of Draft Eastern Colorado RMP/EIS planning process (BLM 1993, BLM 2019b). In 2019, Arkansas River Segment 2, which flows through the western edge of the BCNM from Buena Vista to Salida, was determined to be eligible and suitable as a WSR (free flowing with outstandingly remarkable values), and to have met the criteria under the tentative "recreational" classification.

Proclamation 9232 recognizes that this Arkansas River segment "remains relatively undisturbed and contains an intact biotic community" and that it "provides world class river rafting and outdoor recreation opportunities, including hunting, fishing, hiking, camping, mountain biking, and horseback riding." Proclamation 9232 does not alter or affect the valid existing water rights of any party, nor alter or affect agreements governing the management and administration of Arkansas River flows.

WSR studies for tributaries to the Arkansas River within the monument for this planning process have been completed, none were determined eligible or suitable as a WSR. Refer to Appendix I for a summary of the WSR in the BCNM.

3.2.2 Methods and Assumptions

The analysis area for determining the effects of the alternatives for special designations is the BCNM boundary. Methods of analysis for Special Designations are in the Planning Criteria Report, Section 3.1.3.

The analysis uses the following assumptions:

- The Browns Canyon WSA will continue to be managed in accordance with BLM Manual 6330 until such time as Congress either designates the WSA as wilderness, or releases the WSA for other uses. Managing the WSA according to BLM Manual 6330 will protect the wilderness characteristics of the WSA such that the suitability of the WSA for preservation as wilderness is not impaired.

- Adverse impacts on the roadless area are those that do not protect sources of drinking water, important fish and wildlife habitat, and semi-primitive or primitive recreation areas that include both motorized and non-motorized recreation opportunities, and natural appearance; beneficial impacts are those that preserve and enhance these resources and areas.
- Management prescriptions under the ACEC designation in Alternative A are substantially similar in effect to those under Alternative B.
- Adverse impacts on the National Wild and Scenic River System (NWSRS)-suitable river segment are those that diminish free-flowing characteristics, water quality, outstandingly remarkable values, or characteristics of the rivers that justified their tentative classification as a Wild, Scenic, or Recreational river segment; beneficial impacts are those that preserve and enhance these qualities.
- Impacts on the NWSRS-suitable river segment could result from surface-disturbing activities outside of their corridors that increase sedimentation in rivers or change the visual environment within view of the river segment affecting WSR outstandingly remarkable values, tentative classification, water quality, or free-flowing condition.

3.2.3 Environmental Consequences

This section describes direct, indirect, and cumulative impacts on special designations including the Browns Canyon WSA, Aspen Ridge CRA, Browns Canyon ACEC, and the suitable WSR segment from implementation of the management decisions in the RMP. Impacts on special designations resulting from the alternatives range from management actions that offer additional protection to the specially designated area and their resource values to actions that would adversely affect designated boundaries and resource values. Table 3.1-3 shows the total acres of each special designation under each alternative. The cumulative impacts analysis area for special designations includes lands adjacent to the monument, generally the area depicted in Appendix D, Map 1 (Arkansas River Valley Context).

3.2.3.1 Direct and Indirect Effects

3.2.3.1.1 Wilderness and WSA Decisions

A wide range of management decisions and environmental factors can affect WSAs. Impacts on WSAs would include detracting from the naturalness (appearance, solitude, and primitive and unconfined recreation) of the area or reducing the size of the area. The planning criteria (see Section 1.3.1) require BLM management of WSA qualities during the 20-year life of BCNM RMP/EIS unless Congress releases it from consideration for wilderness designation.

Under Alternative A, if a Congressional decision releases the WSA from wilderness consideration, the Browns Canyon WSA would be managed consistent with adjacent areas within the monument as well as the protective management actions listed under Sections 2.3.4 “Lands with Wilderness Characteristics,” 2.3.5 “Vegetation, Wildland Fire Ecology and Fuels,” 2.3.6 “Visual Resources, Night Skies, and Natural Soundscapes,” and 2.3.9 “Recreation.” Under alternatives B and C, the Browns Canyon WSA would be managed in conformance with monument BCNM RMP goals and objectives. Additionally, as described under Section 3.8 (Visual Resources, Night Skies, and Natural Soundscapes), the Browns Canyon WSA would be managed as Visual Resource Management (VRM) Class I, under alternatives B and C which

would further protect the WSA from surface disturbances. If the Browns Canyon WSA is released from wilderness consideration, under Alternative B the land would be managed for the following resource values; cultural and visual resource, primitive setting (Monument – River East), primitive to front country settings (Arkansas River Shore and Passage), and un-fragmented wildlife habitat. Under Alternative C, the land would be managed consistent with the surrounding lands in the monument to protect for monument ROVs, primitive to backcountry settings (Monument – River East), and primitive to front country settings (Arkansas River Shore and Bench). Alternatives B and C goals and objectives would provide similar protection to the Browns Canyon WSA, although Alternative C could conceivably vary impacts to WSA character given differences in wilderness characteristics and MZ allowances. Both alternatives B and C would have the greatest likelihood of reducing potential adverse impacts on the WSA in comparison to Alternative A.

3.2.3.1.2 Roadless Area Decisions

Under each of the alternatives (A, B, and C), the USFS would continue to manage the Aspen Ridge CRA (CLA; 11,185 acres) in accordance with the 2012 Colorado Roadless Rule (36 CFR 294.43[c][1][ix]) to protect its roadless character and qualities during the 20-year life of BCNM RMP/EIS. This rule generally prohibits road construction, reconstruction, and timber harvest in roadless areas (U.S. Department of Agriculture [USDA] 2016). Managing the Aspen Ridge CRA in accordance with the 2012 Colorado Roadless Rule would ensure protection of its roadless character under each of the alternatives.

3.2.3.1.3 ACEC Decisions

Alternatives A and B would maintain the Browns Canyon ACEC (9,755 acres) and would manage it to protect and enhance its identified R&I values consistent with Proclamation 9232 and BLM policies such as “BLM Manual 17810 Tribal Relations,” “BLM Handbook 1780-1 Improving and Sustaining BLM-Tribal Relations,” BLM “Specially Designated Conservation Area and Wildlife” manuals (6000 Series), and BLM “Cultural Program” manuals (8100 Series). Under Alternative C, by comparison, the Browns Canyon ACEC would not be maintained. However, the identified ROVs would be managed under Presidential Proclamation 9232 and in conformance with monument management plan goals, and objectives and the guidance listed under Alternative B.

A summary comparison of the Browns Canyon ACEC R&I values evaluation (Appendix H) and the ROVs identified in the Presidential Proclamation 9232 (Appendix E) is presented in Table H-3.2 in Appendix H. The comparison shows that the R&I values for the Browns Canyon ACEC (1996) were incorporated and expanded upon in Presidential Proclamation 9232 establishing the BCNM. Therefore, protection of R&I values under Proclamation 9232 is substantially equivalent to, if not greater than, protection under the administrative ACEC designation. Further, Proclamation 9232 applies to the entire BCNM instead of to the smaller ACEC. As a result, the impacts on ACEC resource values, specifically R&I values, would be similar for all three alternatives.

Other management actions that maintain and enhance natural processes, including habitat restoration activities and some vegetation treatments, could be beneficial to certain R&I values over the long term, but may result in short-term, adverse impacts on R&I values.

3.2.3.1.4 Arkansas River Recreational WSR Decisions

Under Alternative A, the Arkansas River Segment 2 (7.1 miles) would not be managed under BLM's interim management policy for eligible and suitable stream segments because it was not determined to be suitable in the 1996 RGRMP/ROD (BLM 1996). Alternative B would recognize Segment 2's eligible and suitable status and apply interim protection measures for its tentative recreational classification. Alternative C would not determine Segment 2 to be suitable nor provide additional water resource management actions. A comparison of the protections afforded under potential WSR designation (tentative recreational classification) versus BNCM designation (Proclamation 9232) demonstrates that the outstandingly remarkable values of Arkansas River Segment 2 would benefit from substantially equivalent protection under all alternatives due to the river ROVs identified in Proclamation 9232 (Appendix I, Section 4). Apart from a WSR decision, Alternative B would result in the most beneficial impacts due to the management actions described under Section 2.3.7 "Watersheds, Soils, and Water Resources" that would further protect and enhance the segment's outstandingly remarkable values.

3.2.3.2 Cumulative Effects

Cumulative impacts on the Browns Canyon WSA would occur from any actions in adjacent areas that result in a noticeable change within the WSA under all alternatives (A, B, and C). These include audible or visual intrusion, impacts on air or water quality, degradation of wildlife habitat, or a noticeable increase in human presence. No direct cumulative impacts to the Browns Canyon WSA from surface disturbances and associated air emissions resulting from mining and the development of utility corridors are anticipated.

Cumulative impacts on the Aspen Ridge Roadless Area would occur from any actions in adjacent areas that result in a noticeable change with the CRA. These include audible or visual intrusion, impacts on air or water quality, degradation of wildlife habitat, or a noticeable increase in human presence. No direct cumulative impacts to the Aspen Ridge Roadless Area from surface disturbances and associated air emissions resulting from mining and the development of utility corridors are anticipated.

Cumulative impacts from the implementation of other resource decisions within and outside of the boundaries of the Browns Canyon ACECs are common among alternatives A, B, and C, and would include any form of surface disturbance within or adjacent to the ACEC or allowable uses that would be counterproductive to the appropriate management of an ACEC and protection of R&I values, such as increased recreational activity. Specific reasonably foreseeable future actions, such as the AHRA Management Plan, would not impact ACECs as future management under these plans would protect the identified R&I values consistent with Presidential Proclamation 9232.

Cumulative impacts would occur to Arkansas River Segment 2 from any actions outside of BCNM that would result in large water withdrawals, sedimentation, or other sources of pollution to enter the water system, adverse impacts on fishery habitat, noticeable increase in human presence, or visual impacts. This would include surface disturbance resulting from the development of minerals, renewable energy, and utility corridors (for example, USFS Western Area Power Administration Right-of-Way Maintenance and Reauthorization Project). However, no direct cumulative impacts are anticipated from these reasonably foreseeable future actions as the Arkansas River Segment 2 would continue to be protected under the AHRA Management Plan and the 1996 RGRMP.

3.3 Air Quality

3.3.1 Affected Environment

The planning area for air quality is comprised of the BCNM and the surrounding areas, which include but are not limited to the AHRA and San Isabel National Forest. There are no existing air quality monitoring stations in the monument, and there are no inventories of emissions from activities occurring within the monument boundary.

Federal, State and local air quality regulations and standards govern the management of air quality within, and in areas directly adjacent to, the BCNM. Air pollutants are emitted from various sources, including industrial facilities, construction activities, building heating and cooling, and motor vehicles. Sources of emissions within the monument are relatively few and small, consisting mostly of visitors' motor vehicles traveling on internal roads and trails, and a few buildings that support operations and maintenance.

The Clean Air Act (CAA) of 1970 as amended (42 U.S.C. Chapter 85 §§7401 et seq.) is the comprehensive Federal law that provides for regulation of air emissions from stationary and mobile sources, establishment of national ambient air quality standards (NAAQS) to protect public health and public welfare, and protection of visibility in relatively pristine areas such as national parks and wilderness areas. To protect human health and welfare, the CAA requires the U.S. Environmental Protection Agency to establish NAAQS for pollutants harmful to public health or the environment. Primary standards are set to protect human health with an adequate margin of safety. Secondary standards are set to protect public welfare and may account for Air Quality Related Values (AQRVs) and protection of plants, animals, and materials. The BCNM region is largely rural. The U.S. Environmental Protection Agency has designated the region as an attainment area for all criteria pollutants. The primary air quality concern in the region is particle pollution from wood burning and road dust (Colorado Department of Public Health and Environment [CDPHE] 2017).

The existing air quality conditions can be characterized by estimated levels of emissions in the region, measured ambient pollutant concentrations, and levels of AQRVs in the region (CDPHE 2015b). The most commonly measured AQRVs are visibility and acidic deposition. AQRVs are of special concern in Class I areas¹. Portions of five Class I areas are located within 100 km of the BCNM: West Elk Wilderness, Maroon Bells-Snowmass Wilderness, Eagles Nest Wilderness, La Garita Wilderness, and Great Sand Dunes National Park and Preserve. Additional areas of concern for AQRVs, known as sensitive Class II areas², also are located wholly or partially within 100 km of the BCNM: Fossil Ridge Wilderness, Raggeds Wilderness, Hunter-Fryingpan Wilderness, Holy Cross Wilderness, Mount Evans Wilderness, Lost Creek Wilderness, Sangre de Cristo Wilderness, Baca National Wildlife Refuge, Curecanti National Recreation Area, and Florissant Fossil Beds National Monument. Appendix D, Map 17, Cumulative Impact Analysis Area for Air Quality shows these areas in relation to the BCNM. Refer to Chapter 2 of the

¹ As defined by the CAA, Class I air quality areas include national parks larger than 6,000 acres and wilderness areas and national memorial parks larger than 5,000 acres that existed or were authorized as of August 7, 1977. They receive the highest degree of air quality protection under the CAA.

² Sensitive Class II areas can be identified by U.S. Department of the Interior (DOI) or USDA agencies on a case-by-case basis.

Planning Assessment, Section 2.1.1 “Air Quality” (BLM and USFS 2018a:pp. 24–25) for more information on existing conditions and trends for air quality and ARQVs in the analysis area.

3.3.2 Methods and Assumptions

The analysis area for determining the effects of the alternatives on air quality is the BCNM boundary as well as the areas surrounding BCNM within 100 km, which includes but is not limited to AHRA and the San Isabel National Forest. The temporal scale is the planning horizon, or 20 years.

The analysis uses the following assumptions:

- Emission of air pollutants can affect air pollutant concentrations, visibility, and atmospheric deposition, which in turn are affected by the magnitude and spatial and temporal distribution of the primary and precursor emissions and their interactions with local and regional meteorological conditions and topographic features.
- The BCNM region is largely rural. The primary air quality concern in the region is particle pollution from wood burning and road dust (CDPHE 2017).
- There are no air quality monitoring stations within the BCNM but inferences concerning air quality can be made using county and regional air data.
- There is no major commercial or industrial development within BCNM. Most air quality effects on the BCNM likely are due to sources in the region surrounding the monument.
- AQRVs are of special concern in the Class I areas and sensitive Class II areas within 100 km of BCNM.

3.3.3 Environmental Consequences

This section describes direct, indirect, and cumulative impacts on air quality and AQRVs from implementation of the management decisions in the RMP. Adverse impacts on air quality and AQRVs include increased pollutant emissions and subsequent decreased visibility in nearby Class I and sensitive Class II areas. BCNM is part of the National Conservation Lands system and situated in a rural region. Therefore, pollutant emissions in the monument are primarily associated with motorized vehicle use from recreation and travel, and wood burning smoke from wildfires and prescribed fires. Alternatives that increase these actions on BCNM lands are anticipated to result in an overall adverse impact on air quality and AQRVs. Conversely, alternatives that restrict travel, manage wood burning in accordance with State and Federal regulation, or offer other proactive resource management practices would generally mitigate adverse impacts or have beneficial effects on air quality and AQRVs in the region.

3.3.3.1 Direct and Indirect Effects

3.3.3.1.1 Recreation, Travel and Transportation Management Decisions

Recreation and travel and transportation management decisions can affect air quality and AQRVs to the extent that they affect motorized, off-highway vehicle (OHV) usage. Motorized vehicle engines generate exhaust emissions and the action of vehicle tires on roads and earth surfaces can generate fugitive dust emissions. Motorized and mechanized travel and OHV designations, as well as locations where new motorized trails would be allowed, remain the same for all alternatives, and are therefore not expected to lead to any meaningful new impacts on air

quality and AQRVs. Recreational visitation at BCNM has generally increased from 2001–2016 (CPW 2016b) and recreation is expected to continue to increase as a result of national monument designation. Consequently, the BLM and USFS expect that there will be potential for increases in recreation and motorized travel-related emissions under each alternative.

The magnitude of potential impacts from MZ designations varies based on the number and size of MZs designated under each alternative and the specific management decisions pertaining to each MZ. MZs that allow for motorized dispersed camping or provide trailheads would generally draw motorized recreationists, contributing to vehicle engine and particulate emissions.

Conversely, MZs that place restrictions on motorized activities could draw fewer motorized recreationists, and emissions from vehicle use in these areas may be less on a per-acre basis.

Under Alternative A, recreation would continue to be managed consistent with the BLM's Arkansas River SRMA and USFS Management Area prescriptions. Therefore, no impacts to air quality or AQRVs in nearby Class I and sensitive Class II areas are anticipated beyond the increased emissions that may be associated with the general increase in recreation at BCNM.

Management actions related to motorized activity in MZs are fairly consistent between alternatives B and C, however Alternative C applies restrictions to motorized dispersed camping in the Monument - River West MZ and Alternative B allows for motorized dispersed camping in the Monument - River West MZ. Impacts to air quality and AQRVs from MZ designation could be slightly greater under Alternative B, but impacts would generally be negligible under all alternatives due to prohibitions on new road development in Presidential Proclamation 9232 and the application of BMPs, as well as because air quality and AQRVs are likely to be more heavily influenced by regional weather patterns and activities outside of BCNM than management of recreation use in the monument.

3.3.3.1.2 Vegetation, Wildland Fire Ecology, and Fuels Management Decisions

Air quality and AQRVs, such as visibility, are adversely impacted by wildfire and prescribed burns, and can temporarily increase particulate matter emissions in the area. The extent of such impacts can vary based on fire location, intensity, and weather/wind. Wood burning emissions include fugitive dust and smoke. Prescribed fire activities can also require the use of commuting vehicles and equipment exhaust. Emissions from these sources, and subsequent smoke transport, can lead to impacts on air quality and AQRVs in Class I and sensitive Class II areas.

Alternative A would continue current management, which allows prescribed fire to be utilized as a management tool on all BCNM lands. Alternative B prioritizes natural ignitions and natural process to manage fuel loads, whereas Alternative C prioritizes reductions in fuel loads using any of the available techniques, including prescribed fire, mechanical, chemical, and biological treatments. By relying primarily on natural ignitions, Alternative B could reduce the frequency of wood burning and the associated emissions in the short-term compared to alternatives A and C. At the same time, prescribed fire and vegetation treatments would decrease the potential for high-intensity wildfires in the long-term. As a result, alternatives A and C would result in long-term beneficial impacts to air quality and AQRVs.

3.3.3.2 Cumulative Effects

The cumulative impacts analysis area for air quality and AQRVs is the direct and indirect analysis area plus the areas surrounding BCNM within 100 km, which includes but is not limited to AHRA and the San Isabel National Forest. Past, present, and reasonably foreseeable future actions on Federal, State, and private lands that would occur outside the scope of management

decisions in this RMP would contribute to cumulative impacts on air quality and AQRVs in the analysis area. Refer to Appendix J “Cumulative Impact Methodology and Past, Present, and Reasonably Foreseeable Future Actions List” for additional information. Actions that could lead to cumulative impacts would encompass other Federal planning efforts, including the Draft Eastern Colorado RMP/EIS and the “Pike and San Isabel National Forests Motorized Travel Plan.” Local planning efforts will also contribute to motorized vehicle patterns in the region. Planned projects in the region that result in pollutant emission sources such as continued vegetation treatments and hazardous fuels reduction and the Union Pacific and Denver & Rio Grande Railroad would contribute to impacts on air quality and AQRVs, as well as natural summertime smoke transport from the Gunnison County area. Increases in recreation and traffic in the region would also lead to greater impacts from motorized vehicle engines and particulate emissions from travel on unpaved roads.

3.4 Cultural Heritage, Tribal Values and Uses

3.4.1 Affected Environment

For the purposes of planning, the analysis area for cultural resources and Native American or Tribal concerns is the BCNM boundary. The monument is located within the Arkansas River Valley, the prehistoric context for which includes Archaic and Late Prehistoric sites (Greubel et al. 2017; Zier and Kalasz 1999). Identified prehistoric sites include campsites, lithic quarries and workshops, culturally modified trees, possible wickiups, and tipi rings. The aboriginal peoples using the area include, at least, the ancestors of the Ute tribes, Apache, Eastern Shoshone, and Comanche Indians. Historically, the BCNM boundary includes early Spanish exploration and occupation from 1706 to the early 19th century, fur trapping and trading in the 1800s, gold and silver mining in the 1850s and 1870s, and the associated development of roadways and rail lines.

Cultural resources are fragile and nonrenewable physical remains of prehistoric and historical human activity in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features that are identified through field inventories, historical documentation, or oral evidence (BLM Manual 8110). Only 725 acres (3.5 percent) of the BCNM has been archaeologically surveyed. None of those surveys have occurred in areas of difficult terrain or access and there are no professional excavations that have been conducted within the monument boundary.

Thirty-four sites have been identified in the BCNM, of which 24 are prehistoric, 9 are historical, and 1 has both a prehistoric and a historical component. Prehistoric sites include a rockshelter, open camps with hearths, and sites that consist of flaked and ground stone tools. Historical sites include a railroad grade, isolated mines and adits, and a mining camp. The multicomponent site contains a tipi ring, as well as a historical wall alignment.

Historic properties are a subset of cultural resources that meet specific eligibility criteria for listing in the NRHP as defined by the NHPA and its implementing regulations (36 CFR 60.4). Cultural resources that do not qualify for potential listing in the NRHP are not subject to further management. Of the 34 known sites, 19 have been evaluated against the criteria for listing in the NRHP as outlined in 36 CFR 60; 6 were determined eligible and 13 were determined not eligible. Of the 6 NRHP-eligible cultural resources, one has a prehistoric and historical component and the rest are prehistoric camps and artifact scatters. Of the 15 sites that have not been evaluated against

the criteria for significance, one is the historical railroad grade, one is the prehistorically used rockshelter, and the rest are either camps with prehistoric hearths or areas of prehistoric tool manufacturing. All of the unevaluated sites were initially recorded prior to 1990. Pursuant to both BLM and SHPO policy, unevaluated or incompletely evaluated cultural resources are managed as if they are eligible for inclusion on the NRHP until proven otherwise.

Presidential Proclamation 9232 states, “The upper Arkansas River valley has long offered both a permanent source of water and a means of transportation for its human inhabitants. The area lies within the transition zone between the cultural traditions of the Great Basin and Plains peoples. As a transportation corridor where stable sources of subsistence resources could be found, both migrating people and permanent inhabitants left traces of their presence in this area. Ancestors of the Ute tribes, Apache, Eastern Shoshone, and Comanche Indians are known to have traversed this dramatic landscape while hunting and gathering.” However, there is little material evidence of Tribal resources or traditional cultural properties within the BCNM. While 15 Tribes have been invited to consult on this RMP, the Southern Ute Tribe have been the only tribe to identify a traditional cultural property within the BCNM. The Rosebud Sioux have also expressed an interest in the area and have indicated that the area may have traditional significance to their tribe. Refer to Chapter 2 of the Planning Assessment, Section 2.1.13 “Cultural Resources” (BLM and USFS 2018a:pp. 151–157) for more information on the BASI, limitations, conditions, and trends for cultural resources in the analysis area.

This RMP is programmatic in nature and does not authorize or approve site-specific actions that may impact cultural resources. However, once specific projects or plans are proposed, the BLM and USFS will identify both specific direct and indirect Areas of Potential Effects consistent with the proposed development and identify needed inventory and identification efforts necessary for compliance with Federal laws (i.e., 54 U.S.C. §306108). The definition of direct and indirect Areas of Potential Effects may extend beyond the BCNM boundary and will take into account both the direct effects from project implementation as well as indirect effects to the auditory, visual, and aesthetic settings.

Moreover, the lands identified as "Cooperative Management Lands" (CML) in the AHRA Management Plan are subject to the provisions of the Programmatic Agreement among the BLM, Royal Gorge Field Office, the Colorado SHPO, CPW, the USDA, USFS, and the Advisory Council on Historic Preservation regarding the AHRA Management Plan. Actions on the CML within BCNM must follow the procedures outlined in this agreement (CPW et al. 2019; Appendix D).

3.4.2 Methods and Assumptions

The planning area for determining the effects of the alternatives on cultural resources is the BCNM boundary.

In addition to the information presented in Section 3.4.1 “Affected Environment,” the analysis uses the following assumptions:

- Survey coverage, which is mostly in areas with increased development, is currently limited to 3.5 percent of the BCNM. An unknown distribution of cultural resources exists throughout most of the monument.

- Sites located along the river will often have buried components and comparatively large artifact assemblages that are likely underestimated and under-recorded in previous documentation.
- Information regarding the traditional cultural property identified by the Southern Ute Tribe is not included for purposes of this analysis, though it is included in Tribal collaboration.
- Cultural resources have been directly impacted by natural and human-caused activities, including erosion, vandalism, development, or recreational surface collections, which have altered the physical condition of sites.
- Impacts to cultural resources and uses from recreational activities will increase as visitors and tourists access a full range of recreational activities (e.g., day use from developed sites, dispersed hiking, and climbing) from roads and rivers.

3.4.3 Environmental Consequences

This section describes direct, indirect, and cumulative impacts on cultural resources from implementation of the management decisions in the RMP. Both adverse and beneficial impacts are expected to occur from the management decisions described in this document. Increased access to remote areas through recreational land use can result in adverse impacts because of the associated increase in human activity, which may lead to a greater potential for illegal artifact collection, vandalism, erosion, and trampling. Conversely, beneficial impacts on cultural resources would result from management decisions that restrict surface-disturbing activities, close or limit travel and access, or establish special designation areas.

3.4.3.1 Direct and Indirect Effects

Federal historic preservation laws such as the NHPA require the analysis of impacts from Federal undertakings and are intended to protect historic properties on Federal lands. Compliance with Federal laws (i.e., 54 U.S.C. §306108) is required for all Federal undertakings and includes the completion of mitigation measures to resolve any adverse effects regardless of the alternative. These laws also require consultation with federally recognized tribes, the SHPO, and other consulting parties, identifying and evaluating cultural resources in the area of potential effect, and adhering to procedures to resolve any adverse effects to historic properties. Therefore, adverse direct or indirect effects on significant cultural resources from any Federal undertaking would be mitigated under all alternatives and would be addressed on a project-by-project basis.

Even though all significant cultural resources within the BCNM boundary are equally protected by Federal laws, some cultural resource management decisions have the potential for beneficial impacts on cultural resources. All of the alternatives include inventory, public education, and outreach, monitoring for long-term conservation, and increasing Tribal collaboration.

Alternatives B and C provide for an increase in interpretive development of cultural resources within the monument and within designated trail systems. Alternative B increases BMPs for restoration, stabilization, and protection of cultural resources, especially when included in special designations of WSRs and WSAs that are released from Wilderness consideration.

3.4.3.2 Cumulative Effects

The cumulative impacts analysis area for cultural resources includes the area immediately surrounding the monument. Potential cumulative impacts on cultural resources include reasonably foreseeable activities on adjacent lands including other Federal, State, and private lands. Surface-disturbing activities, such as recreation uses and transportation improvements, are expected to continue to occur within the analysis area. These activities would increase the amount of human presence in the region, increasing the likelihood for illegal artifact collection, vandalism, and trampling. Special designations and restrictions on surface disturbance under Alternative B have the potential to provide cumulative beneficial impacts on cultural resources within the analysis area and region, as they would restrict the frequency and extent of ground-disturbing activities. However, all ground-disturbing undertakings in the monument would be subject to Federal mandates (i.e., 54 U.S.C. §306108), which would avoid or mitigate cumulative effects on historic properties on Federal lands on a project-by-project basis.

3.5 Geology, Minerals and Paleontology

3.5.1 Affected Environment

3.5.1.1 Geological and Paleontological Features

The BCNM is located within the Arkansas River Valley, on the western flank of the Mosquito Range, at the eastern edge of the Colorado Mineral Belt. The terrain is rugged with elevations ranging from 7,300 feet to 10,000 feet amsl and an abundance of rock outcrops. The BCNM's distinctive geological features—some of which include rugged granite cliffs and the northernmost valley in the Rio Grande Rift system—contribute to the monument's scenic values and cultural history, provide opportunities for geological research and public interpretation, and contain a diverse assemblage of invertebrate fossils. Mapped geologic types consist primarily of Quaternary alluvial deposits along the Arkansas River and its tributaries; widespread intrusive Proterozoic granite formations; Paleozoic sedimentary rock sequences of dolomite, sandstone, and limestone along the eastern edge of the BCNM; and deposits of Eocene volcanic tuff in the south and northeast portions of the monument (Kellog et al. 2017). Paleontological resources are also known to exist in BCNM and are an identified ROV. The fossil record in the Arkansas Valley ranges from the Upper Cambrian Period to the end of the Pleistocene Epoch, representing approximately 520 million years (BLM and USFS 2018a:pp. 56–57).

3.5.1.2 Mineral Development and Collection

The BCNM boundary is the analysis area for mineral resources. There are currently four known mining claims within the BCNM and the Browns Canyon WSA—consisting of placer claims spanning the Arkansas River southeast of Nathrop (BLM 2018b)—which were filed in 2012 prior to Browns Canyon's designation as a national monument and its withdrawal from mineral entry. There are currently no other known mining claims, mineral material disposal sites, or fluid or solid mineral leases within the monument (BLM 2018b). Per Presidential Proclamation 9232, the monument is withdrawn from all forms of entry, location, selection, sale, leasing, or disposition of minerals, and the BLM and USFS have no authority otherwise. Refer to Chapter 2 of the Planning Assessment, Section 2.1.3 “Geology and Minerals” (BLM and

USFS 2018a:pp. 45–56) for additional information on historical mining activity and mineral development potential in the vicinity of the BCNM.

Historically, BLM and USFS regulations allowed the public to conduct certain types of mineral collection (for noncommercial purposes) and casual-use mining on Federal lands without prior notification or approval. Although no data exist on noncommercial mineral collection and casual-use mining areas and usage specifically within the BCNM, interest in garnet collection and gold placering has been observed in the region (CPW, BLM, and USFS 2019; BLM 2015a). Common activities have included gold placering in the Arkansas River and Browns Creek via panning or sluicing, as well as rock-hounding and garnet collection throughout the monument. Mineral collection in the Ruby Mountain portion of the BCNM WSA has resulted in a proliferation of social trails that exacerbate soil erosion. The collection of monument resources is prohibited by Presidential Proclamation 9232.

3.5.1.3 Abandoned Mine Lands and Natural Hazards

Mineral development has occurred historically in the vicinity of Browns Canyon and in various locations along the Arkansas River corridor, including several mines and prospecting sites within the BCNM (Liebold et al. 1986). An inventory of abandoned mine features on USFS-administered lands conducted by the Colorado Geological Survey (2018) identified several abandoned mines within and adjacent to the BCNM. The BLM conducted abandoned mine land inventories in and around the monument area in 2016 and the results of those inventories correlate to the USFS data. Abandoned mine features, some of which were classified as potentially hazardous, include dilapidated buildings, prospecting holes, open pits, mine adits, and mine shafts at three sites within and along the southwestern and western monument boundary: Green Gulch, the Reef, and Coons Park. The Colorado Abandoned Mine Land Information website (2018) identifies additional abandoned mine features on BLM lands, including prospect pits, waste rock dumps, and adits in the vicinity of Hecla Junction, along the River Access Trail, and south of Ruby Mountain.

The primary geological hazards within the BCNM are rockfall, landslides, and flash floods. Hazard areas have not been inventoried, but in general are most likely to occur in steep-sided canyons, on steep slopes, and beneath cliff faces.

3.5.2 Methods and Assumptions

The analysis area for determining the effects of the alternatives on geological, mineral, and paleontological resources is the BCNM boundary and the temporal scale is the planning horizon, or 20 years.

The analysis uses the following assumptions:

- Recreation use is likely to increase throughout the BCNM.
- BLM and USFS regulations have historically allowed the public to collect reasonable amounts of rocks, mineral specimens, and semiprecious gemstones for noncommercial purposes on Federal lands, without prior notification or approval. Interest in small-scale gold placer mining has also been observed in the region containing the BCNM.

- Presidential Proclamation 9232 withdraws all monument lands from laws authorizing disposal of minerals, including noncommercial mineral collection and gold placer mining, subject to valid existing rights.
- An inventory of abandoned mine features on USFS-administered lands conducted by the Colorado Geological Survey (2018) identified several abandoned mines within and adjacent to the BCNM. Abandoned mine features, some of which were classified as potentially hazardous, included dilapidated buildings, prospecting holes, open pits, mine adits, mineshafts, and waste rock dumps.

3.5.3 Environmental Consequences

This section describes direct, indirect, and cumulative impacts on geology, minerals, and paleontology from implementation of the management decisions in the RMP. Management that increases public and scientific knowledge of geological, mineral, and paleontological resources or protects and preserved these resources would result in beneficial impacts to the resources.

3.5.3.1 Direct and Indirect Effects

3.5.3.1.1 Recreation and Public Education

Increased visitation to BCNM could have adverse effects on sensitive geological features, but also would provide increased opportunities for the public to learn about geological processes contributing to the formation of Browns Canyon, historical uses of the lands, and the dangers from historic mining activities in the monument. The degree to which effects on sensitive geological features and opportunities for education would occur varies by alternative.

All alternatives would allow recreational uses in the monument, and therefore could result in adverse impacts to sensitive geological features, such as damage to rock faces in areas available for recreational climbing: unauthorized collection of, or damage to paleontological resources; or effects from erosion on user-created social trails. Alternative A provides limited proactive management for addressing impacts from recreational use in the monument. In contrast, alternatives B and C could reduce the potential for recreation effects on sensitive geological features, including paleontological resources due to their proactive approaches to closing additional social trails and increasing resource conservation (Alternative B) or developing addition recreation facilities and infrastructure that could direct visitors to areas away from sensitive resources (Alternative C). Alternatives B and C would allow the construction of elevated walkways and interpretive signs to direct visitors and control their access in ways that reduce impacts on sensitive geologic features. Alternatives B and C also would focus on the promotion of partnerships with users and user groups to create educational strategies for the protection of geological and other resources, which could provide greater beneficial impacts than Alternative A, which does not require the use of educational partnerships as tool to manage recreation effects. Regardless of the alternative selected, the Federal agencies could also close routes and climbing areas where resource damage is occurring.

3.5.3.1.2 Abandoned Mine Lands and Natural Hazard Management

The Federal agencies manage abandoned mine lands to mitigate and remediate these features and to ensure public safety. In consideration of the preservation of monument ROVs and other resource concerns, all alternatives would continue to allow mine and abandoned mine hazard

mitigation. In addition, alternatives B and C would promote partnership opportunities to educate the visitors to the monument about the potential dangers of abandoned mine lands and natural hazards. Specifically promoting such partnerships could beneficially increase public awareness of the danger of abandoned mine lands and natural hazards to a greater degree than management under Alternative A.

3.5.3.1.3 Mineral Development and Collection of Monument Resources

The monument is withdrawn from all forms of entry, location, selection, sale, leasing, or disposition of minerals. Therefore, the collection of monument resources is prohibited by Presidential Proclamation 9232. If Congress enacts legislation authorizing collection of minerals, and the BLM and USFS promulgate regulations governing noncommercial collection, consistent with that directive, the following impacts would be expected:

- Adverse impacts to noncommercial mineral collectors would be the least under Alternative C, which would generally allow mineral collection in the monument, and largest under Alternative B, which would impose timing and location restrictions on collection.
- Impacts to noncommercial mineral collectors would be the least under Alternative B due to its emphasis on primitive and backcountry activities and greater restrictions on front- and middle-country recreational activities.
- Impacts to shorelines and increases in resource user conflicts due to gold placering activities would be greatest under Alternative C due to the emphasis it places on providing a wider variety of river and upland recreational opportunities in primitive, backcountry, middle-, and front-country settings; thereby increasing use of the monument resources and providing more opportunities for interactions between recreational users with different recreational goals and values.

3.5.3.2 Cumulative Effects

The cumulative impacts analysis area for geology, minerals, and paleontology is the analysis area. Cumulative impacts are reasonably foreseeable future actions within the analysis area in addition to those related to the management decisions described above. This would include a statewide increase in population. In general, an increase in population would result in increased visitation at BCNM and may encourage the continuation of garnet collection, rock-hounding, and gold placering activities that are prohibited by Presidential Proclamation 9232. Due to increased visitation, the opportunities for greater use of sensitive geologic features would increase the potential for damage to those features and would increase the opportunity for unauthorized collection of paleontological resources such as fossils. Increased visitation also would place additional pressure on land management staff but would provide greater opportunities to partner with users and user communities to educate the public. Increased education would benefit the public by increasing knowledge of the opportunities offered by the monument, promoting safe use of monument activities and contributing to enjoyment of the resources by a greater number of people. A population increase would allow the promotion of recreational activities to a larger number of people and would benefit the public by providing greater opportunities to learn about the unique geology of BCNM.

Provided the four known mining claims in BCNM remain active, they could be used for mineral prospecting, exploration, development, and extraction activities so long as all reasonable efforts are made to meet non-impairment criteria and prevent unnecessary and undue degradation pursuant to 43 CFR 3802 and 3809. Development of these mining claims would represent a continuation of historical mining use of lands in and around BCNM, but would also increase the potential for damage to sensitive geologic features paleontological resources.

3.6 Lands with Wilderness Characteristics

3.6.1 Affected Environment

In addition to conserving resources, lands with wilderness characteristics provide experiences for users seeking solitude and primitive recreational opportunities. The BCNM boundary is the analysis area for lands with wilderness characteristics.

As shown in Table 3.6-1, portions of two inventory units for lands with wilderness characteristics in the BCNM meet the criteria outlined in BLM Manual 6310: the Railroad Gulch and Browns Canyon North, Ruby Mountain units, as shown in Appendix D, Map 4. The Arnold Gulch unit has also been inventoried, but does not meet the criteria outlined in BLM Manual 6310 due to the fact that it is not over 5,000 acres in size or contiguous with a wilderness area or WSA; therefore, this unit is not discussed further. There is not a comparable “lands with wilderness characteristics” inventory unit on USFS lands. Roadless areas were addressed in Section 3.1 “Special Designations” of this document.

Table 3.6-1. Lands with Wilderness Characteristics Inventory Units in the BCNM

Identifier	Inventory Unit	Total Acres	Acres within BCNM	Adjacent to Wilderness or WSA	Wilderness Characteristics Present
COF-020-005	Railroad Gulch	2,448	537	Yes	Yes
COF-020-044	Browns Canyon North, Ruby Mountain	96	88	Yes	Yes
Total		2,544	625	-	-

Table Acronyms: BCNM=Browns Canyon National Monument, WSA=Wilderness Study Area

Sources: BLM 2013a, BLM 2013b

Lands with wilderness characteristics within and adjacent to the BCNM were delineated using roads and property lines when possible. Each unit was then evaluated for wilderness characteristics as defined in “BLM Manual 6310 – Conducting Wilderness Characteristics Inventory of BLM Lands” as part of a 2013 study. Minimum information standards for BLM to consider during the wilderness characteristics inventory process include a map of sufficient detail to determine specific boundaries, a detailed narrative that describes the wilderness characteristics of the area, and photographic documentation.

The Railroad Gulch inventory unit (COF-020-005) is located near the southern boundary of the BCNM immediately east of and parallel to the Arkansas River; it parallels the river for approximately 0.85 mile. The topography in the unit is rugged and varies in elevation from 7,400 feet amsl near the Arkansas River to 8,200 feet amsl near the eastern boundary (BLM 2013a). The presence of canyons and gulches and the lack of motorized routes within the

unit offer outstanding opportunities for solitude and greatly diminish the chances of encountering other public land visitors (BLM 2013a). While 537 acres of the Railroad Gulch unit lies within the BCNM, an additional 1,911 acres extend outside the boundary of the BCNM to the south. The Railroad Gulch unit is contiguous with the Browns Canyon WSA, making it eligible to be managed for wilderness characteristics.

The Browns Canyon North, Ruby Mountain inventory unit (COF-020-045) is located in the northwest corner of the BCNM, south of County/BLM Road 300. The unit is near the AHRA and is comprised of rocky canyons and pinnacles (BLM 2013b). The topographic screening provided by this landscape, as well as piñon-juniper and ponderosa woodlands, allow for outstanding opportunities for solitude and unconfined recreation (BLM 2013b). Of the 96 acres in the unit, 88 (92 percent) lie within the BCNM boundary and the inventory unit is contiguous with the Browns Canyon WSA, which fulfills the requirement to be managed as lands with wilderness characteristics (BLM Manual 6320). Refer to Chapter 2 of the Planning Assessment, Section 2.1.16 “Lands with Wilderness Characteristics” (BLM and USFS 2018a:pp. 171–174) for more information on existing conditions and trends, as well as the inventory report forms (BLM 2013a and BLM 2013b).

3.6.2 Methods and Assumptions

The analysis area for determining the effects of the alternatives for lands with wilderness characteristics is the BCNM boundary. This area encompasses areas where activities managed or authorized by the BLM or USFS would potentially affect lands with wilderness characteristics, primarily through degrading or enhancing wilderness characteristics, including naturalness and outstanding opportunities for solitude and primitive and unconfined recreation. Methods of analysis for Lands with wilderness characteristics are in the Planning Criteria Report, Section 3.5.3.

The analysis uses the following assumptions:

- Alternatives with more surface-disturbing and surface use activities within lands with wilderness characteristics would result in greater impacts than less disturbing alternatives.
- The BLM has discretion regarding whether to protect wilderness characteristics through land use planning decisions.

3.6.3 Environmental Consequences

This section describes direct, indirect, and cumulative impacts on lands with wilderness characteristics from implementation of the management decisions in the RMP. Lands with wilderness characteristics can be affected by a wide range of management decisions and environmental factors. Generally, actions that create surface disturbance affect the natural character of these areas and diminish the setting for experiences of solitude and primitive recreational activities. Motorized uses, operation of equipment for wildfire, prescribed burns and vegetation management, and the noise and presence of people in these areas detract from opportunities for both solitude and primitive forms of recreation. Decisions to manage the two units with lands with wilderness characteristics to maintain or protect their wilderness characteristics, such as limiting the amount of surface disturbance to occur that would affect their naturalness, would result in beneficial impacts.

3.6.3.1 Direct and Indirect Effects

3.6.3.1.1 Lands with Wilderness Characteristics Decisions

Under Alternative B, Railroad Gulch (537 acres) and the Browns Canyon North-Ruby Mountain (88 acres) inventoried areas would be protected and maintained through management decisions that would eliminate allowable uses that can affect their naturalness, opportunities for solitude and unconfined recreation, and other supplemental values. These management decisions include the use of minimal impact fuel and vegetation treatments, minimal impact suppression tactics in response to wildfires, and limitations on Special Recreation Permits (SRPs). Under alternatives A and C, these inventoried areas would not be managed separately from other monument management actions. Given the acreage of land managed for wilderness characteristics and the allowable use decisions to protect naturalness, opportunities for solitude and unconfined recreation, and supplemental values, Alternative B would result in the greatest beneficial impacts on lands managed for wilderness characteristics, followed by alternatives A and C.

3.6.3.1.2 Vegetation Management Decisions

Under Alternative B, vegetation management would include a design to reduce fuel loads, maintain or improve vegetation health and function, control the spread of noxious weeds and invasive plant species, and reduce the potential for uncharacteristic wildfires and large-scale alterations to vegetation patterns. During these activities, Alternative B could include the noise and presence of people, hand tools, and operations that could temporarily diminish opportunities for solitude and primitive forms of recreation. Vegetation management that maintains or improves forest health and function is likely to have long-term beneficial impacts on lands with wilderness characteristics. Alternatives A and C have no similar actions and would not result in any additional beneficial impacts as no vegetation management decisions would be made to protect or maintain wilderness characteristics. Additional management actions are described under Section 2.3.5 “Vegetation.”

3.6.3.1.3 Wildland Fire Management Decisions

Under Alternative B, the BLM would manage wildfires and prescribed burns to protect, maintain, and enhance resources, as well as to reduce the risk of uncharacteristic wildfires. If wildland fire management operations exceed the frequency and intensity of the ecosystem’s natural fire regime, they would temporarily degrade the natural landscape and character of the lands with wilderness characteristics. In the long term, surface disturbance associated with wildfire and prescribed burns management activities would be restored, with little to no net effect on naturalness. A more natural landscape would benefit the natural character of lands possessing wilderness characteristics and enhance the setting and opportunities for primitive forms of recreation. Fire management decisions under Alternative B would result in the greatest beneficial impact on lands with wilderness characteristics by using minimum impact suppression tactics wherever possible. Alternatives A and C have no similar actions and would not result in any additional beneficial impacts as no wildland fire management decisions would be made to specifically protect or maintain wilderness characteristics. Additional vegetation and wildland fire management actions are described under Section 2.3.5 “Vegetation.” During these activities, the noise and presence of the people, equipment, and operations would also temporarily diminish opportunities for solitude and primitive forms of recreation.

3.6.3.1.4 Recreation and Permitting Decisions

Recreation decisions would have beneficial and adverse impacts on lands possessing wilderness characteristics. Decisions to maintain primitive recreation settings and to manage for primitive, unconfined types of recreation would result in beneficial impacts. Alternative B would impose the most limitations on recreation by only issuing SRPs if it can be demonstrated that wilderness characteristics would not be impacted, prohibiting competitive events, reviewing and adjusting current outfitting guiding levels, and limiting signage so that it is of primitive character to be consistent with the surrounding areas. Through these limitations, Alternative B would have the greatest beneficial impact on lands with wilderness characteristics by maintaining primitive and unconfined types of recreation settings. Alternatives A and C have no similar actions would not result in any additional beneficial impacts as no recreation or permitting management decisions would be made to protect or maintain wilderness characteristics. Additional management actions are described under Section 2.3.9 “Recreation.”

3.6.3.2 Cumulative Effects

The cumulative impacts analysis area for lands with wilderness characteristics are the lands adjacent to the monument, generally the area depicted in Appendix D, Map 1 (Arkansas River Valley Context). Vegetation management activities may alter landscape appearance and setting in the short and long term, protecting or degrading wilderness characteristics depending on the activity. Reasonably foreseeable actions such as continued residential and recreational development and vegetation management activities have the potential to affect the naturalness of lands with wilderness characteristics. Continued residential and tourism development in the cumulative impact analysis area and nearby communities would likely increase visitor use on BLM-administered lands including lands with wilderness characteristics, potentially impacting wilderness characteristics by reducing opportunities for solitude.

3.7 Vegetation, Wildland Fire Ecology and Fuels

3.7.1 Affected Environment

3.7.1.1 Vegetation

The analysis area for vegetation is the BCNM boundary. Elevation, slope, aspect, and soil type are the major determinants of plant communities in the BCNM. Within the southern Rocky Mountains Ecoregion where the monument is located, vegetation, as well as soil and land use, follow a pattern of elevation banding (BLM 2015a). Although there are frequent exceptions within the BCNM, piñon-juniper woodlands most often occur at elevations below 7,500 feet amsl; ponderosa pine woodlands and forests are between 7,500 and 9,000 feet amsl; and Douglas-fir, spruce, and aspen forests are found above 9,000 feet amsl.

The USFS has mapped vegetation within the BCNM. As shown in Table 3.7-1, piñon-juniper woodland is the most extensive vegetation community followed by mixed conifer types. Together, these communities account for more than 80 percent of vegetation in the monument. An intensive biological survey of plant species in the BCNM conducted in 2016 recorded a total of 340 plant species representing 62 families of plants (Olson 2017b) (Appendix D, Map 19).

Table 3.7-1. Existing Vegetation Communities and Land Cover in the BCNM

Land Cover	Acres	Percent of BCNM
Aspen Dominated Stands	342.8	1.6
Grass/Forb/Shrub	1,233.6	5.7
Mixed Conifer – Cool and/or Moist	1,510.3	7.0
Mixed Conifer – Warm and/or Dry	6,637.3	30.7
Piñon-Juniper Woodland	10,145.7	47.0
Ponderosa Pine/Grass	528.9	2.4
Riparian – Grass/Forb Dominated	141.4	0.7
Riparian – Shrub Dominated	30.8	0.1
Riparian – Tree Dominated	592.6	2.7
Shrub – Mountain Mahogany Dominated	135.7	0.6
Spruce-Fir	1.6	0.0
River Corridor	180.8	0.8
Roads and Buildings	22.5	0.1
Areas with less than 25% vegetative cover	99.8	0.5
Total	21,603.7	100.0

Table Acronyms: BCNM=Browns Canyon National Monument

Source: USFS 2017a

Most of the vegetation within the BCNM is likely within its natural range of variability (NRV) (Olson 2017a) and BLM land was determined to meet “Standards for Public Land Health” in 2005 and 2017. In some plant communities (e.g., riparian, mixed conifer forest), there is some indication that diversity, composition, and frequency are degraded, and this may pose a threat to sustainability of native species in some areas. These affected communities may not be as resistant to changing conditions, disturbances, or weed invasions. Forests and woodlands exhibit a moderate level of departure from a NRV, trending towards more dense stands as a result of historic fire suppression. Refer to Chapter 2 of the Planning Assessment, Section 2.1.7 “Terrestrial Vegetation” (BLM and USFS 2018a:pp. 81–96) for more information on recent treatments conducted by the BLM within the BCNM to reduce piñon pine density.

Pastures were historically heavily grazed. Rangeland analysis for the most recent environmental assessment authorizing livestock grazing shows that these pastures are meeting or moving towards desired conditions (USFS 2008). Monitoring subsequent to the “2008 Rangeland Allotment Management Planning Environmental Assessment” indicates that this trend continues.

Appendix D, Map 9, Waters within the National Monument Boundary illustrates existing wetland and riparian areas, based on National Wetland Inventory data. Wetlands range from less than 1 acre to 224 acres in size and are classified as emergent, forested/shrub, and riverine. Wetlands associated with the Arkansas River corridor and its tributaries comprise the majority of the wetland areas, totaling 454.2 acres (92 percent) of all wetlands. Refer to Chapter 2 of the Planning Assessment, Section 2.1.9 “Wetlands and Riparian Resources” (BLM and USFS 2018a:pp. 103–113) for more information on wetland and riparian conditions.

Various non-native, noxious, and/or invasive weeds are present along the Arkansas River corridor due to historical agricultural practices, mining, transportation (rail road and other roads), construction, drought, and increasing recreational use, and are beginning to expand onto public

lands (CPW, BLM, and USFS 2019). Noxious weeds within 5 miles of the river corridor may include, but are not limited to black henbane, bull thistle, Canada thistle, common tansy, dalmatian toadflax, diffuse knapweed, downy brome, elongated mustard, field bindweed, flixweed, houndstongue, leafy spurge, musk thistle, myrtle spurge, oxeye daisy, perennial pepperweed, plumeless thistle, Russian knapweed, Russian olive, saltcedar, scentless chamomile, Scotch thistle, spotted knapweed, water milfoil, white top, and yellow toadflax. Two of these species were confirmed to be present in BCNM in 2016: Canada thistle and dalmatian toadflax (Olson 2017b). Refer to Chapter 2 of the Planning Assessment, Section 2.1.7 “Terrestrial Vegetation” (BLM and USFS 2018a:Table 2-15, pp. 88–89) for more information on invasive plants and noxious weed occurrence in the monument.

Waves of insects and disease have likely spread throughout the BCNM in the past, thinning forest stands, and these factors are anticipated to be an ecological driver in forest communities in the future. The loss of some pine, fir, and spruce trees during the current outbreaks of spruce mountain pine beetle may have similar impacts. Aerial surveys indicate moderate to severe spruce and mountain pine beetle activity near the boundaries of the monument between 1996 and 2016 (USFS 2016).

Climate change and drought will continue to interact with the ecological drivers discussed above and alter plant communities in the Arkansas Valley as current warming and drying trends continue (Lukas et al. 2014). These effects are expected to be greatest at the interface between ecological communities.

3.7.1.2 Special Status Plant Species

Special status plant species include all species currently listed as endangered, threatened, proposed, or candidate species under the Endangered Species Act, as a USFS Sensitive Species, and those listed on the BLM “Sensitive Species List for Colorado.” These species that are either documented or have the potential to occur in the BCNM are listed in Table 3.7-2. Additionally, a USFS species of conservation concern (SCC) is defined as a species, other than those federally recognized as endangered, proposed, or candidate species, that is known to occur on USFS lands and for which the regional forester has determined that the BASI indicates substantial concern about the species’ capability to persist over the long-term on USFS lands.

Table 3.7-2. Special Status Plant Species Recorded and with the Potential to Occur in the BCNM

Species	Federal Status ¹	Recorded in BCNM	Considered for SCC Status	Brief Habitat Description and Range in Colorado
Brandegee Buckwheat (<i>Eriogonum brandegeei</i>)	B, FS	No	Yes	Occurs in open pinion-juniper stands on exposed soil in the upper Arkansas River valley in Chaffee and Fremont counties.
Rock-loving aletes (<i>Neoparrya lithophila</i>)	B, FS	No	Yes	Occurs on volcanic substrates in cracks and shelves usually within minimal talus, and moderate to steep rock outcrops.
Arkansas Canyon Stickleaf (<i>Mentzelia densa</i>)	B	Yes	Yes	Grows in naturally disturbed areas such as washed and rocky slopes. Found in dry, open sites often with pinion-juniper or mountain mahogany.

3.0 Affected Environment/Environmental Consequences

Species	Federal Status ¹	Recorded in BCNM	Considered for SCC Status	Brief Habitat Description and Range in Colorado
Fendler's False Cloak Fern (<i>Argyrochosma fendleri</i>)	B	Yes	Yes	Occurs on talus and cliff crevices of arid canyonsides, and volcanic substrates within ponderosa pine or piñon-juniper woodlands.
Fendler's Townsend Daisy (<i>Townsendia fendleri</i>)	B	Yes	Yes	Occurs on arid hills and benches in the foothills and montane climate zones from 7,200 to 8,200 feet in elevation. These are sparsely vegetated slopes with piñon and juniper, often on gypsum soils.
Pale Blue-eyed Grass (<i>Sisyrinchium pallidum</i>)	N/A	Yes	Yes	Generally found in wet meadows and along stream and lake margins at elevations from 6,300 to 9,700 feet amsl from the foothills to subalpine. Soils are often alkaline, developed in alluvium, colluvium, and residuum.
Colorado Tansy-aster (<i>Xanthisma coloradoense</i>)	FS	Yes	Yes	Generally found in mountain parks, slopes, rocky outcrops, and dry tundra at elevations ranging from 7,600 to 13,000 feet amsl from the montane to alpine. Soils are generally gravelly, derived from colluvium and residuum. Sites are often limestone, and have little competition from other plants.
Hall's Milkweed (<i>Asclepias hallii</i>)	N/A	Yes	Yes	Generally found in sandy and gravelly soils, on sloping streambanks, in piñon-juniper stands, among sagebrush, and in cottonwood groves. Elevation ranges from 7,400 to 10,000 feet amsl from the plains to montane.
Lesser Yellow Lady's-Slipper (<i>Cypripedium parviflorum</i>)	FS	No	No	Inhabits subalpine wetlands as well as a variety of habitats in the lower montane zone including aspen groves and ponderosa pine-Douglas-fir forests. Occurs from 6,000 to 9,500 feet amsl. Uncommon and declining, but widespread in North America.
Lesser Panicked Sedge (<i>Carex diandra</i>)	FS	No	Yes	Inhabits montane to subalpine willow carrs and rich fens at elevations ranging from 7,000 to 10,000 feet amsl. Wetland obligate species. One record exists 0.25 mile east of the Salida Ranger District outside of the boundary of BCNM.
Richardson Needlegrass (<i>Achnatherum richardsonii</i>)	N/A	No	Yes	Found in montane meadows and forests of aspen or lodgepole pine at elevations between 7,500 and 10,000 feet amsl. Occurs in soils developed by alluvium and glacial till.
Barneby's Feverfew (<i>Pethenium alpinum</i> var. <i>tetraneuris</i>)	N/A	No	Yes	Occurs in open juniper woodlands on plains bluff tops at elevations from 4,800 to 6,500 feet amsl in soils derived from gypsum and shale. Nearest known occurrence is 5 miles from BCNM.

Species	Federal Status ¹	Recorded in BCNM	Considered for SCC Status	Brief Habitat Description and Range in Colorado
Strigose Townsend-Daisy (<i>Townsendia strigosa</i>)	N/A	No	Yes	Found in the plains and foothills in sandy or clay soils on dry sites. Occurs at elevations from 5,000 to 6,700 feet amsl.
Livermore Fiddleleaf (<i>Nama dichotum</i>)	N/A	Yes	Yes	Found from plains to montane habitats on sandstone and in sandy soils between 5,300 and 10,000 feet amsl. Occurs in piñon-juniper, ponderosa pine, and aspen stands.
Rocky Mountain Phacelia (<i>Phacelia denticulata</i>)	N/A	No	Yes	Occurs in rocky or sandy soils on steep forested slopes at elevations from 5,500 to 10,000 feet amsl. Regional endemic found from Wyoming to New Mexico.
Crandall's Rockcress (<i>Boechea crandallii</i>)	N/A	No	Yes	Found in rocky montane to subalpine areas with sagebrush at elevations from 6,500 to 10,600 feet amsl. Also occurs in aspen stands and coniferous woodlands. There are several records of the species' occurrence near BCNM.

¹Status Codes: FS=U.S. Forest Service Sensitive; B=BLM Sensitive; N/A=Not applicable

Other Table Acronyms: amsl=above mean sea level; BCNM=Browns Canyon National Monument; SCC=Species of Conservation Concern

3.7.1.3 Wildland Fire Ecology and Fuels

The analysis area for wildland fire ecology and fuels is the BCNM boundary. Fire is a natural system driver in arid western terrestrial ecosystems. Historically, it has acted as a natural disturbance agent, sustaining various vegetation communities within a NRV in terms of structure and composition. Different vegetation types have different fire regimes; a fire regime is the typical fire interval and severity that occurs with vegetation and climatic conditions. The range of elevation in the monument creates various vegetation communities and, in turn, a range of historic fire regimes that vary in fire frequency and severity. For example, the spruce-fir forests that comprise the higher elevations of the monument generally experienced infrequent, stand-replacing fires, while the mixed conifer forests at lower elevations experienced a more moderate fire regime with more frequent, but less severe (mixed-severity) fire. Refer to Chapter 2 of the Planning Assessment, Section 2.1.8 "Wildland Fire Ecology" (BLM and USFS 2018a:pp. 96–103) for more information on fire conditions in the BCNM based on LANDFIRE spatial modeling data, including fire regime groups and vegetation condition classes.

There have been 25 fires documented between 1970 and 2016 within the BCNM boundary (White 2017). Sixteen of these fires occurred on USFS-administered land, and nine occurred on BLM-administered land. Twenty-three were caused by lightning and two were caused by humans. Most fires on USFS lands have been suppressed, while fires on BLM lands within the Browns Canyon WSA have either been suppressed or allowed to burn naturally for resource benefits while being monitored. All documented fires that have occurred within the BCNM have been less than 2 acres, except for one in 1994 that burned 13 acres.

A wildfire/watershed assessment for the Upper Arkansas River basin completed in 2011 categorized sixth-level watersheds in the basin according to their wildfire hazard. Of the 10 watersheds intersecting the BCNM, the assessment ranked five as having a moderate wildfire hazard (i.e., Railroad Gulch, Herring Creek, Ute Creek-Arkansas River, Trout Creek, Little

Cottonwood Creek-Arkansas River, and Wagon Tongue Creek-Badger Creek) and five as having a moderate to low wildfire hazard (i.e., Headwaters Badger Creek, Cottonwood Creek-Arkansas River, Rye Slough, Browns Canyon, and Squaw Creek-Arkansas River) (J.W. Associates Inc. 2011).

3.7.2 Methods and Assumptions

The analysis area for determining the effects of the alternatives on vegetation is the BCNM boundary and the temporal scale is the planning horizon, or 20 years.

The analysis uses the following assumptions:

- Most of the vegetation is within its NRV, but some communities (e.g., riparian, forest) exhibit signs that diversity and composition are degraded, and these trends will continue and pose a threat to native species in some areas.
- Observed trends in woodland communities will continue, including increase in age and cover with reduced composition and cover of understory species.
- Some of the grass/forb dominated areas of the BCNM exhibit evidence of historic livestock overgrazing. Some of these grasslands may be outside their NRV because of a shift from cool season mid-height grasses and forbs to dominance of short grasses and fringed sagebrush (Olson 2017).
- Activities that will disturb soils, including increased recreational activity, could cause erosion, loss of topsoil, and soil compaction, which could affect the ability of vegetation to regenerate. Increased soil disturbance could increase dust, which could cover existing vegetation and impair plant photosynthesis and respiration. Resulting impacts could include lowered plant vigor and growth rate, altered or disrupted pollination, and increased susceptibility to disease.
- Foothill shrublands and woodlands (sagebrush shrubland, pinyon-juniper woodland) re-establishment in disturbed areas will create a vegetation landscape similar to adjacent lands in excess of 20 years.
- Ecological health and ecosystem functioning depend on a number of factors, including vegetative cover, species diversity, nutrient cycling and availability, water infiltration and availability, and percent cover of weeds.
- Drought will likely become more frequent with climate change, but even without more frequent drought, higher temperatures could exacerbate tree water stress (Adams et al. 2017). Forest die-offs associated with drought and rising temperatures are likely to continue at the regional level and expand into the BCNM in the future.
- Noxious weeds will continue to be introduced and spread as a result of ongoing vehicle traffic in and out of the analysis area, recreational activities, wildland fire, wildlife, and livestock grazing and movements, and surface-disturbing activities.
- BLM allotments within the BCNM are regularly assessed to determine conformance with “Standards for Public Land Health” and “Guidelines for Livestock Grazing Management in Colorado”. BLM land within BCNM was determined to be meeting “Standards for Public Land Health” in 2005 and 2017 (BLM 2005, BLM 2017).

3.7.3 Environmental Consequences

This section describes direct, indirect, and cumulative impacts on vegetation, special status plant species, wildland fire ecology and fuels from the implementation of management decisions in the alternatives.

Impacts on vegetation (including special status plant species) resulting from management decisions can range from the removal of vegetation that results in failing to achieve the desired future conditions to the spread of noxious weeds that are capable of outcompeting desirable native vegetation. Conversely, some management decisions provide protections to vegetation communities when they preclude or place constraints on surface-disturbing activities in certain areas. Key decision areas affecting vegetation resources (in addition to decisions for vegetation resources) include recreation (MZs), special designations (WSAs), travel management, and lands with wilderness characteristics.

Vegetation and fuel conditions are affected, in part, by management of such resources on BLM and USFS lands, but are also profoundly influenced by broader trends in climate, historic land use and development, and the presence of invasive species and pests. Management decisions to conduct vegetation and fuel treatments generally result in beneficial effects to fire and fuel management by making ecosystems more resilient to subsequent fires. Decisions that restrict the ability to conduct or manage fuel treatments, or prescribed fire, would have adverse impacts on wildland fire management. Restrictions on access and development could reduce the potential for unplanned ignitions and the expansion of infrastructure requiring protection through fire suppression.

3.7.3.1 Direct and Indirect Effects

3.7.3.1.1 Vegetation

Vegetation Resource Decisions

Vegetation resource decisions intend to reduce impacts on vegetation and promote healthy and diverse communities on BLM- and USFS-administered surface lands within the analysis area. Management to reduce fuel loads or maintain them with the NRV, control the spread of invasive species, and achieve land health standards would be implemented under all of the alternatives, but to varying degrees.

Alternative A manages vegetation to meet desired plant condition and to accomplish other BLM and USFS objectives (riparian and wildlife objectives, forage and habitat, reducing fuels, compliance with the Colorado Undesirable Plant Act, etc.) which tend to result in site-specific management actions. Alternative B would generally attempt to mimic natural processes to the maximum degree possible and would not allow mechanical terrestrial vegetation treatments unless necessary for the protection of life or property. Alternative B would also allow management of naturally ignited wildfires and would prohibit use of non-native or noxious plants and seeds for restoration and nonstructural range improvements. This management would be least likely to result in short-term adverse impacts to vegetation resources by not allowing mechanical terrestrial vegetation treatments. However, by not allowing these treatments it would also be less likely result in long-term beneficial impacts by allowing fewer management tools to create more resilient and diverse vegetation communities and to reduce fuel loads to within the NRV. Alternative B would also generally increase other protection measures that would reduce

potential spread of noxious weeds in BCNM compared to other alternatives. However, prohibiting aerial application of herbicide under Alternative B would preclude treatment of elongated mustard, which is a List A (eradication) species in the State of Colorado. Because this species grows in steep, rocky cliffs, aerial application is the only known effective method for control.

Alternative C would manage vegetation through mechanical, chemical, and biological, and chemical treatments and would allow wildfire, prescribed burning treatments, and hand thinning to meet vegetation management objectives for desired plant condition, resiliency, native plant communities, and to maintain or improve forage availability. Alternative C would also allow desirable non-native species to be used for certain restoration objectives, provided the seed lot is free of noxious weeds species. Although these management actions would result in greater short-term disturbances, greater long-term beneficial impacts on vegetation communities and the ability to achieve land health standards could result compared to alternatives A and B. Both alternatives B and C emphasize the use of adaptive management as a tool to meet vegetation resource management objects and to address climate-driven stressors on vegetation communities within the BCNM.

Recreation Decisions

Recreation decisions would be beneficial to vegetation when they reduce potential resource degradation as a consequence of recreation activities or adverse when recreation facilities remove vegetation or provide greater access to indirectly result in the greater potential for adverse impacts to vegetation from increased human use and activity. More human access, including dispersed camping and hiking can lead to the trampling of vegetation and the creation of unintended trails. Increased human presence in general can result in an adverse impact through the accumulation of trash and waste, the spread of invasive and noxious weeds, and the potential for engaging in unauthorized activities, such as plant collection or clearing.

Under Alternative A, USFS-administered lands in the monument are managed with USFS Recreation Opportunities Spectrum (ROS) categories and Management Area prescriptions. This includes the construction, reconstruction, and maintenance of developed sites in accordance with these categories and prescriptions. Impacts to vegetation communities vary depending on the Management Area prescriptions. For example, 4B and 5B favors needs for designated species, and recreation opportunities in 6B, 2B, and 4D are managed for primitive or semi-primitive facilities in nature, reducing the potential for disturbances to vegetation communities. However, in areas where recreational use is already occurring and expected to increase, such as Aspen Ridge Road, management towards primitive settings may facilitate greater resource degradation through more dispersed camping and trail/route creation.

Alternative C, by expanding the area managed under landscape settings of Backcountry, Middle County, and Front Country over Alternative B, would generally allow for more recreation infrastructure such as trails, trailheads, parking facilities, dispersed camping, and/or campgrounds which would result in greater surface-disturbance impacts to vegetation communities and generally facilitate greater access to the public with the potential to affect vegetation. However, in areas anticipated to have relatively high levels of recreational use (e.g., Arkansas River corridor and Aspen Ridge, Hecla Junction, and Ruby Mountain MZs) more facilities to address this use could limit occurrence of unauthorized trails that can degrade vegetation. Both alternatives B and C would allow for management actions that could reduce

potential adverse impacts to vegetation through fire pan requirements, restrictions on camping at trailheads, and camping duration limits.

Managing visitation increases would generally decrease potential impacts to vegetation by managing the density of users and variety of uses. Both alternatives B and C would limit camping to designated dispersed camping within the Arkansas River Shore and Passage/Bench MZ to limit adverse impacts to vegetation. However, this MZ would expand from 538 acres under Alternative B to 1,701 acres under Alternative C, including over 600 more acres of piñon juniper woodland and 200 more acres of mixed conifer forests. Therefore, Alternative C would result in greater beneficial impacts to these vegetation communities by preventing potential adverse effects to vegetation from dispersed camping in areas anticipated to receive higher use.

Alternative B would reduce potential impacts to vegetation by prohibiting certain special recreational uses across the monument, such as competitive events (except on the river surface) compared to Alternative C which applies this management to just outside of the WSA.

Alternative A manages these special use activities on a case-by-case basis. Additionally, both alternatives B and C include prohibition of camping in trailheads or other facilities intended for day-use only and the allowance of closure and rehabilitation of all undesignated social routes, resulting in long-term beneficial impacts to vegetation communities in these areas.

Alternative C allows for the development of Arkansas River crossing(s) outside of the WSA but within the Arkansas River Shore and Bench, Monument - River East, Monument - River West, and Ruby Mountain – Hecla Junction Access MZs. Alternative B prohibits this allocation therefore, Alternative B would provide a greater beneficial impact to vegetation communities by limiting additional recreational opportunities and access to BCNM.

Special Designation Decisions

Special designation decisions for WSRs and WSAs may affect vegetation resources, as discussed below.

WSAs

Management actions currently identified with WSAs under Alternative A conform to wilderness management policies. Alternatives B and C consider the impacts of the potential release by Congress of the Browns Canyon WSA (7,463 acres), in whole or in part, from wilderness consideration. Vegetation communities would benefit from surface-disturbing and resource use restrictions under management of the Browns Canyon WSA. Lands released from wilderness considerations would be managed consistent and in conformance with monument management plan goals, objectives, and applicable manuals for Specially Designated Conservation Area and Wildlife guidance and the management decisions included in the RMP (alternatives B and C). Restrictions on use and development in a released WSA under alternatives B and C would generally provide protection for vegetation consistent with management as a WSA.

WSRs

Determining the Arkansas River Segment 2 within the BCNM as a suitable segment for WSR designation and applying interim protective management under alternatives A and B may result in beneficial impacts to vegetation by placing management emphasis on protecting botanical outstandingly remarkable values. Under Alternative C, determining the segment as not suitable and releasing it from interim protective management may result in less beneficial impact without management emphasis to protect botanical outstandingly remarkable values. However,

application of BMPs (Appendix G) and mitigation and monitoring (Appendix K) to meet vegetation management objectives under all alternatives continue to confer beneficial impacts to vegetation.

Travel Management Decisions

Travel and transportation management decisions can have both beneficial and adverse impacts on vegetation. Adverse impacts occur when new routes are open for mechanized travel. Not only does this result in the clearing of existing vegetation along the new route but it also increases the potential for the spread of invasive and noxious weeds. Beneficial impacts would occur when travel routes are closed and native vegetation is restored; however, closing travel routes would also make it more difficult to detect and treat new and/or existing infestations of noxious weeds. All of the alternatives limit 14,141 acres to designated routes and close 7,463 acres of motorized travel routes, resulting in beneficial impacts to vegetation communities by limiting off-road travel and trail creation. However, alternatives B and C would also allow rehabilitation of routes, or section of routes, within the monument to protect ROVs, resulting in additional beneficial impacts when compared to Alternative A.

Lands with Wilderness Characteristics

Management to protect wilderness characteristics would place limits on surface disturbance and activities to preserve naturalness and outstanding opportunities for solitude, generally resulting in beneficial impacts to vegetation resources. Alternative B allows management to protect wilderness characteristics on 537 acres in the Railroad Gulch unit and 88 acres in the Browns Canyon North-Ruby Mountain unit. Fuels and vegetation treatments would be designed in these areas so they will not impact wilderness characteristic values beyond 5 years (refer to Appendix K “Mitigation Strategy and Monitoring Measures” for monitoring of land with wilderness characteristics), resulting in beneficial impacts to vegetation resources. Alternatives A and C do not manage lands with wilderness characteristics to protect, preserve, or maintain their wilderness characteristics.

3.7.3.1.2 Special Status Plant Species

Vegetation Resource Decisions

As noted in Section 3.7.1.1, vegetation resource decisions intend to reduce impacts on vegetation and promote healthy and diverse communities on BLM and USFS-administered surface lands within the analysis area. All alternatives include an objective to protect and maintain special status plant species within the BCNM (Objective VF1.2). Vegetation management decisions would benefit special status plant species by prescribing a range of vegetation treatments to improve vegetation community structure and resiliency, which would enhance special status species habitat. Vegetation decisions include the use of BMPs to prevent the introduction and spread of invasive species, which would promote the maintenance of special status plant species habitats through the preservation of intact, native vegetation communities.

In general, management for vegetation resources under Alternative B would be most beneficial to special status plant species and their habitats by attempting to mimic natural processes to the maximum degree possible. Alternative B would provide for the greatest protection of special status plant species and their habitat from new trails, followed by Alternative C; Alternative A does not include a specific management action to avoid special status plant species with new trails. Conversely, Alternative C would allow the use of non-native species to be used for certain

restoration objectives. Alternative C allows mechanical, chemical, and biological vegetation treatments, as well as prescribed burning for a variety of objectives, which would increase the potential for disturbance of special status plant habitats in the short-term. However, site-specific analysis and application of BMPs would mitigate the potential for impacts, and more management tools for vegetation treatments under Alternative C may result in greater long-term beneficial impacts by maintaining and restoring desired conditions for vegetation to a greater degree when compared to Alternative B.

Recreation Decisions

Impacts on special status plant species and habitats from recreation would be similar to those described in Section 3.7.3.1.1 and would be beneficial when they restrict surface disturbance related to other uses of the land or adverse when recreation activities could damage vegetation communities.

Recreation decisions under the action alternatives would reduce adverse impacts on special status plant species compared to Alternative A by closing and rehabilitating undesignated social routes and restricting motorized dispersed camping. As discussed in Section 3.7.3.1.1, impacts to vegetation communities (and special status plant species) vary depending on the MZ boundaries and recreation management prescriptions under alternatives B and C. By generally allowing a greater degree of facility development and trails throughout the monument, Alternative C has the potential to lead to higher recreational use and potential for degradation of special status plant species habitat. However, in areas where recreational use is already high and expected to continue to increase, such as the Arkansas River Shore and Passage/Bench and Aspen Ridge MZs, providing more facilities to manage anticipate recreational use under Alternative C may benefit special status plant species in these piñon-juniper woodland, mixed conifer, and aspen vegetation communities forests more than Alternative B, under which continued dispersed use and the potential for unauthorized routes would be greater. Any potential effects from recreational facility development impacts would be minimized by site-specific analysis and siting considerations, and application of BMPs (Appendix G).

Special Designation Decisions

Decisions to maintain special designations would generally benefit special status plant species and their habitat by emphasizing the preservation and conservation of other resource values that contribute to special status plant species habitat within the analysis area. Effects to special status plant species would be similar to those described for other vegetation in Section 3.7.3.1.1 "Vegetation."

Travel Management Decisions

Travel management decisions would have both beneficial and adverse impacts on special status plant species and their habitats. Land designations related to travel management (open, closed, and limited to designated roads) would have various impacts on special status plant species based primarily on the amount of motorized access available to specific areas. Impacts of motorized access would result in surface disturbances and would increase the potential for adverse impacts to special status plant species.

All of the alternatives would allocate the same OHV area designations; however, alternatives B and C allow rehabilitation and reclamation of routes to protect monument ROVs, allow shuttle system SRPs, and include seasonal closures for wildlife protections. When compared to

Alternative A, these restrictions on OHV use would result in greater beneficial impacts to special status plant species and their habitats by reducing surface-disturbance.

Lands with Wilderness Characteristics

The potential impacts to special status plant species and their habitat from managing lands with wilderness characteristics are the same as described in Section 3.7.3.1.1. Management for lands with wilderness characteristics under Alternative B would result in greater beneficial impacts to special status plant species when compared to alternatives A and C which do not manage lands with wilderness characteristics to protect, preserve, or maintain their wilderness characteristics. However, under all alternatives special status plant species would be protected to meet Objective VF1.2 through site-specific assessment and siting considerations and application of BMPs (Appendix G).

3.7.3.1.3 Wildland Fire Ecology and Fuels

Wildland Fire Ecology and Fuels Decisions

Fire and fuel management under all alternatives are expected to have beneficial impacts on the ability to manage unplanned wildfires and use wildland fire as a tool to meet other management goals. Alternative B prioritizes the use of natural ignitions and natural processes to manage fuel load, whereas Alternative C allows mechanical, biological, chemical, and prescribed fuel treatments to reduce fuel loads across the analysis area. Current management under Alternative A allows prescribed fire and natural ignitions to be used in the enhancement of other resources. Alternative C allows for the most opportunity to treat areas in the BCNM with overly dense forest stands that are outside the NRV and areas where die-offs from spruce mountain pine beetle have occurred to facilitate more ecologically resilient wildland fire and fuel conditions. It also allows for the greatest range of fire response options. Allowing for the suite of management options under Alternative C would likely result in more cost efficient wildland fire management outcomes, including lower potential costs of suppression, followed by Alternative A and then Alternative B. As a result, Alternative C would result in the greatest beneficial impact to wildland fire ecology and fuels, followed by alternatives A and B.

Recreation Decisions

Recreational activities can result in adverse impacts on wildfire suppression due to the increased likelihood for wildfire ignitions in SRMAs and MZs, where both concentrated and dispersed recreational uses increase the likelihood for unintended ignitions. This impact would be similar across all alternatives but may be slightly decreased under alternatives B and C due to additional restrictions on recreation activities, including fire pan requirements. Overall, trending increases in visitation and recreation use in the analysis area are likely to increase the potential for unintended ignitions under all alternatives.

Special Designation Decisions

Management of WSAs could limit the flexibility to implement certain fire management tools, but would also restrict activities and development that may increase the risk of wildfire and complicate fire response. Restrictions on fire management activities in special designations include prohibiting surface-disturbing activities, and managing areas as VRM classes I or II, which would limit the ability to use motorized equipment and conduct prescribed fire treatments.

Management of WSAs under all alternatives would require the use of minimum impact suppression tactics.

Travel Management Decisions

Travel designations provide access throughout the analysis area, which may result in long-term, adverse, indirect impacts by increasing the incidence of human-caused fires. Increased access may also increase the potential for fire in more remote locations that are more difficult to respond to and control, thereby increasing suppression costs. Alternatively, the presence of OHV routes may result in long-term, beneficial, indirect impacts for fuels management and suppression by increasing access, reducing response time, providing management flexibility, and reducing suppression cost. All of the alternatives designated 14,141 acres as OHV Limited and 7,463 acres to OHV Closed, resulting in a potential for reducing the incidence of human-caused fires. Alternatives B and C allow rehabilitation of routes, or section of routes, within the monument to protect ROVs, which could reduce access for wildfire suppression and fuel treatments.

Lands with Wilderness Characteristics

Alternative B is the only alternative that allows management to protect wilderness characteristics. In lands managed to protect wilderness characteristics under Alternative B, fuels and vegetation treatments would be designed not to impact wilderness characteristics past 5 years and minimum impact suppression tactics would be implemented in response to wildfire. These restrictions may limit the ability to implement effective fuel and prescribed fire treatments within lands managed to protect wilderness characteristics (625 acres under Alternative B). When compared to alternatives A and C, Alternative B may require additional treatments and management efforts at the periphery of lands managed to protect wilderness characteristics to reduce the risk of fires spreading to adjacent areas.

3.7.3.2 Cumulative Effects

The cumulative impacts analysis area for vegetation, special status plants, and wildland fire ecology is the analysis area and areas directly adjacent to the analysis area where noxious weeds, invasive species, and wildfires could spread. Various non-native, noxious, and/or invasive weeds have expanded onto public lands in the analysis area from unmaintained rail corridors and highway ROWs in the region. Trending increases in visitation and recreation use in the analysis area are anticipated to increase potential physical disturbances and associated contributions to cumulative impacts. Climate change and drought are likely to alter plant communities in the Arkansas Valley in the foreseeable future.

Past, present, and reasonably foreseeable vegetation and fuels treatment projects from land, travel, and resource management planning efforts (e.g., BLM Eastern Colorado RMP; AHRA Management Plan) could contribute to cumulative impacts in the analysis area. Wildlife and habitat improvement projects could result in overall beneficial effects on vegetation conditions, including special status plant species and their habitats, in the analysis area and within the watershed. Among the alternatives, Alternative B would contribute the least to cumulative impacts to vegetation communities and special status plant species by limiting human access that can facilitate the spread of invasive species that degrade native plant communities. By allowing more access, alternatives A and C have the potential to allow for more cumulative effects in this regard. However, Alternative B would also limit vegetation treatments to address overly dense

and/or dying stands to effectively mitigate the potential for and manage wildfires, the incidence of which is anticipated to continue to increase. Alternative C would allow more management tools to address this stressor of native vegetation communities.

3.8 Visual Resources, Night Skies, and Natural Soundscapes

3.8.1 Affected Environment

The BCNM boundary is the analysis area for characterizing the conditions and trends for visual resources. The BCNM contains a diverse landscape that includes undulating rounded landforms with rugged and broken exposed rock outcrops and boulder fields bisected by long linear drainages that flow west to the Arkansas River. The drainages that bisect the various landforms are a combination of ephemeral watercourses lined with pockets of riparian vegetation that contrast with the dominant species of pinyon-juniper, and conifers. The Arkansas River, which parallels the western boundary of the monument, is a striking landscape contained primarily within an incised and dramatic exposed granite canyon. The free-flowing river and associated riparian vegetation that contrast with the surrounding landforms and woodland vegetation are a dominant visual feature in the BCNM that adds variety and interest. Manmade or human development is localized along the western bounds of the monument and consists primarily of recreational facilities and a railroad grade that parallels the Arkansas River. Development associated with the town of Nathrop and dispersed residential development along and adjacent to State Highway 285 is present and visible west of and adjacent to the monument.

The BLM and USFS have developed formal systems to inventory visual resources, evaluate visual change in the landscape, and manage visual resources on the lands under their jurisdiction. The BLM uses the VRM System, which involves inventorying scenic values, establishing management objectives for those values through the resource management planning process, and then evaluating proposed activities to determine whether they conform to the management objectives (BLM 1984). The BLM weighs visual and competing resource values and designates the VRM classes (Class I–IV), with associated management class objectives for a given area’s visual setting. The USFS utilizes the Scenery Management System (SMS), which incorporates an inventory and assessment of biological, physical, and social/cultural resources within a geographic area (USFS 1995). Scenic Integrity Objectives “SIO” are classified as “very high,” “high,” “moderate,” “low,” and “very low.” Refer to Chapter 2 of the Planning Assessment, Section 2.1.15 “Visual Resources” (BLM and USFS 2018a: Tables 2-30 through 2-33, pp. 162–165) for more information on the visual resource inventory and management systems.

Current BLM allocations of VRM classes and USFS SIOs are presented in Table 2.3-6 and Appendix D, Map 6.

As part of the 2015 RGFO Visual Resource Inventory (VRI), scenic quality, sensitivity, and visual distance zones were applied to all lands within the RGFO regardless of land status to provide the RGFO an understanding of visual characteristics across the field office. Final VRI classes were applied to both BLM and USFS-managed lands in BCNM for the purposes of this joint planning effort as the best available scientific data in determining visual management classes. The findings of the 2015 RGFO VRI as it applies to BCNM and the adjoining visual landscape are presented below.

- **Sensitivity Level:** Sensitivity levels associated with the Upper Arkansas Valley, including lands associated with BCNM, are considered High as a result of the importance of recreation destinations, heritage landscapes and the iconic Colorado setting (Appendix D, Map 20).
- **Scenic Quality Rating:** The variety in landforms and vegetation, the prominence of water, variety in color combinations and adjacent scenery associated with Buffalo Peaks and the Collegiate Peaks provided for an overall Scenic Quality score of A (score 22.5), the highest score on a scale of A to C (Appendix D, Map 21).
- **Visibility:** Highway 285 and the Arkansas River corridor were selected as visual distance zone platforms within the area of BCNM. BCNM occurs within the foreground/middleground distance zone area, with isolated areas of “seldom seen” as a result of topography (Appendix D, Map 22).
- **VRI Inventory Class:** VRI Class II was assigned to BLM lands associated with BCNM, prior to national monument designation, based on the above inventory components (VRI Class II and III were assigned to USFS lands). VRI Class I was assigned as an overlay to approximately 7,463 acres associated with Browns Canyon WSA. Per BLM Manual 8410, Class I is assigned to those areas where a management decision has been made previously to maintain a natural landscape including other congressionally and administratively designated areas where decisions have been made to preserve a natural landscape (Appendix D, Map 23).

Dark night skies have become increasingly valued and an asset to communities scattered through the west, including communities within proximity of the BCNM. Dark night skies can be considered a valued resource as part of the monument due to the remoteness and level of solitude one may experience when not disturbed by skyglow or light trespass. The 2014 Chaffee County land use code has adopted lighting and dark sky standards to reduce or eliminate glare and light trespass by requiring shielded and downcast lighting in all new residential or commercial developments.

The BCNM boundary plus a 3-mile buffer is the geographic extent considered in this assessment for characterizing the conditions and trends for natural soundscapes. Although noise can and does extend beyond 3 miles, the 3-mile distance was chosen because it is the likely distance to which noise emanating from most surface-disturbing activities would attenuate to an acceptable level for sensitive receptors. The soundscapes of the BCNM offer an array of natural sounds, as well as an environment relatively free of human-caused sound. Human-caused sound (intrusive sound) can be disruptive to visitors and wildlife. Protection of ambient soundscapes has received growing attention for over four decades, with legislation dating back to the Noise Control Act of 1972. Subsequent nationwide legislation has described the importance of the acoustical environment for resource protection and visitor experience in protected natural areas. Because of the abundant noise found in urban and suburban areas, the majority of visitors to protected natural areas come seeking respite from ambient stressors such as noise. Natural quiet is important for visitors, ecosystem health, and the welfare of non-human species who reside in protected natural areas. As a part of the 2017 Social Landscape Assessment and public scoping, the public indicated the importance of solitude/sounds/quiet (Bartlett 2017).

3.8.2 Methods and Assumptions

The primary analysis area for determining the effects of alternatives on visual resources and related values is the BCNM boundary. A secondary analysis area includes foreground areas near the BCNM entry points at Ruby Mountain and Hecla Junction. The temporal scale will be the planning horizon, or 20 years.

The analysis uses the following assumptions:

- Visual design considerations would be incorporated into all surface uses regardless of size, potential impact, or applicable VRM class and SIO.
- Surface uses would conform to VRM class and SIO over the long-term. Short-term or temporary conformance of authorized land uses while under the development or construction phases would be determined by land manager based on surface use.
- Restoration of areas that exhibit modifications of the natural setting, outside of developed use areas or that have historical significance can have a beneficial impact to the scenic quality of the immediate area or viewshed.
- Scenic integrity aligns with landscape NRV.
- Activities that cause the most contrast and thus are the most noticeable to the casual viewer would be considered to have the greatest effect on scenic quality. The severity of a visual effect depends on a variety of factors, including the size and scale of a project, vegetation and landform manipulation, and the overall visibility of disturbed areas. The more protection that is associated with the management of other resources and special designations, the greater the benefit to visual resources of the surrounding viewsheds.
- Sensitivity levels within the BCNM are high overall, a continued trend in overall sensitivity to change in the visual landscape within BCNM is likely if management actions may affect the overall landscape character.
- Scenic, night sky, and natural soundscape resources would become increasingly important to residents of and visitors to the area. The inactive railroad presence will continue.

3.8.3 Environmental Consequences

This section describes direct, indirect, and cumulative impacts on visual and related resources that would result from implementation of the management decisions in the alternatives.

Impacts on visual resources are assessed by comparing the existing VRI class and the proposed VRM class or SIO of an area and examining how other resources and resource use management actions may affect visual resources with a focus on potential change in scenic quality or landscape character. In addition, due to the complex topography and remoteness of the majority of BCNM, the landscape includes a mix of foreground/middleground and seldom-seen distance zones with high visual absorption capacity. Changes in visual distance zones could occur as a result of management actions related to additional development, thus creating more visible areas to the public where changes in landscape character are more discernable. As such, the impact analysis focuses on the potential for change in the VRI classification due to a potential change in scenic quality.

3.8.3.1 Direct and Indirect Effects

This section describes direct and indirect effects of management alternatives on visual resources, scenery, night skies, and natural sounds. For each alternative, the allowable level of change to the visual landscape is assessed by comparing the existing visual resource conditions, expressed through the VRI classification of an area, to the proposed VRM or SIO classification of the same area. The VRM and SIO class objectives provide criteria for determining the level of disturbance that an area can support, while still meeting visual resource objectives. The goals and objectives for VRM classes in all alternatives seek to maintain scenic values, vistas, overlooks, open spaces, night skies, and natural aesthetics and to minimize the visual impacts of infrastructure by using design guidelines, standards, and BMPs that stipulate color, contrast, background, integrity, lighting design, and restoration.

3.8.3.1.1 Alternative VRM Classes and SIOs

Applying more restrictive visual resource management objectives (e.g., VRM I/II or SIO Very High/ High) would preserve or retain the existing visual character of the landscape. In other words, the inventoried scenic values would be expected to remain the same. For example, BLM VRI Class II and III areas, managed as VRM Class I or II, would afford more protection of inventoried visual values. Conversely, lands identified as VRI Class II and III and managed as VRM Class III or IV (which are less restrictive) would see a greater potential for visual values to be impacted, particularly if VRM Class III or IV is applied to VRI Class II lands. Table 3.8-1 illustrates the VRI and VRM or SIO classification overlaps for each alternative.

The VRM areas were classified in the 1996 RGRMP prior to the release of the BLM Manual 6330 which states that all WSAs should be designated as VRM Class I.

Under both alternatives B and C, the vast majority of the monument would be designated as either VRM Class I or SIO High, with Alternative B having the highest percentage within these two designations. As shown in the table, Alternative C has a greater diversity of VRM and SIO management classifications than Alternative B.

Table 3.8-1. Comparison of VRI Class to Visual Resource Management Objective by Alternative

VRM/ SMS Class	VRM / SMS Acres	VRI Class I		VRI Class II		VRI Class III	
		Acres	%	Acres	%	Acres	%
Alternative A							
VRM I*/ SIO Very High	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0
VRM II/ SIO High	9,271/ 0	7,457	35	1,814	8	0/ 0	0/ 0
VRM III/ SIO Moderate	522/ 62	0/ 0	0/ 0	522/ 62	2/<1	0/ 0	0/ 0
VRM IV/ SIO Low	0/ 11,750	0/ 0	0/ 0	0/ 0	0/47	0/ 0	0/ 0
Alternative B							
VRM I/ SIO Very High	8,922/ 11,069	7457/ 0	35/ 0	1,465/9,626	7/ 45	0/ 0	0/ 0
VRM II/ SIO High	429/ 743	0/ 0	0/ 0	429/ 556	2 / 3	0/ 0	0/ 0
VRM III/ SIO Moderate	323/ 0	0/ 0	0/ 0	323/ 0	2/ 0	0/ 0	0/ 0
VRM IV/ SIO Low	119/ 0	0/ 0	0/ 0	119/ 0	1/ 0	0/ 0	0/ 0

VRM/ SMS Class	VRM / SMS Acres	VRI Class I		VRI Class II		VRI Class III	
		Acres	%	Acres	%	Acres	%
Alternative C							
VRM I/ SIO Very High	7, 457/ 9,802	7,457/ 0	3/ 0	0/ 9277	0/ 43	0/ 525	0/2
VRM II/ SIO High	1,601/ 1,718	0/ 0	0/ 0	1601/ 613	7/ 3	0/ 1,104	0/ 5
VRM III/ SIO Moderate	548/ 292	0/ 0	0/ 0	548/ 292	3/ 1	0/ 0	0/ 0
VRM IV/ SIO Low	187/ 0	0/ 0	0/ 0	187/ 0	1/ 0	0/ 0	0/ 0

Table Acronyms: SIO=Scenic Integrity Objectives; SMS=Scenery Management System; VRI=Visual Resource Inventory; VRM=Visual Resource Management

Sources: BLM 1996, 2015; USFS 1984

*Per the 1996 RGRMP, WSAs are managed by the Instructional Memorandum later replaced by BLM Manual 6330 as VRM Class I.

VRM is considered protective of existing visual resources when it assigns VRM Class I and II objectives to inventoried Class II or III lands. Similarly, SMS is considered protective of existing visual resources when it assigns Very High or High SIO to inventoried lands. With this understanding, Table 3.8-1 leads to the following impact conclusions: Alternative B is the most protective of visual resources within BCNM, followed by alternatives C and A, respectively.

3.8.3.1.2 Management of Other Program Areas

Management for vegetation, wildland fire ecology, and fuels; lands and realty; range and livestock grazing; geology minerals and paleontology; recreation and travel management would result in direct and indirect adverse impacts on visual resources. Impacts would occur from mechanical and chemical changes in vegetation, potential increases in surface-disturbing activities or facility development, which could all contribute to potential changes in VRI classes I, II, and III. In comparison, by instituting constraints on resource uses would reduce potential long-term direct and indirect, adverse impacts on visual resources.

Long-term direct and indirect adverse impacts on inventoried visual values (scenic quality, sensitivity, and visual distance zones) would result from the development of permanent facilities or other intrusive activities. No major developments are planned within the monument under any of the alternatives. Short- and long-term, indirect, adverse impacts that could result from resource uses and activities including the development of roads, prescribed fire, vegetation management, and structural and non-structural range improvements or route proliferation associated with unauthorized cross-country OHV travel.

Alternative A would increase the potential for direct and indirect adverse impacts from changes to inventoried visual values to the greatest extent of any alternative as a result of the least amount of management controls for the most resources and resource uses, followed by alternatives C and B, respectively.

Alternatives B and C, respectively, include the largest acreage of VRM Class I/ II and High / Very High SIO designations. This combination would reduce potential adverse impacts on visual resources compared to Alternative A. In general, impacts from changes to VRM class would be similar based on the similar restrictive management under all alternatives.

Application of visual resource BMPs identified in Appendix G “Best Management Practices” would generally reduce the potential for direct and indirect adverse impacts on inventoried visual values. For example, the visual resource contrast rating system would be used to analyze

potential visual impacts of proposed actions and identify design features to reduce impacts. Projects would be designed to avoid and mitigate impacts and conform to the assigned VRM or SIO class.

3.8.3.1.3 Dark Night Skies

The potential for impacts on dark night skies is driven by the degree of use restrictions such as the creation of recreation facilities and OHV use (all of which can decrease light pollution), and the extent and management of special designations (which may limit future development and associated light pollution). Alternative A contains the fewest special designations and restrictions on resource uses that could otherwise increase light pollution, followed by alternatives C and B, respectively.

3.8.3.1.4 Natural Soundscapes

The potential for impacts on natural soundscapes is driven by the degree to which the BLM authorized activities that would result in an increase of intrusive sounds (e.g., OHV use). Alternatives B and C, respectively, include the largest acreage of protective restrictions due to the management of other resources and special designations, and would support preservation of natural soundscapes to a greater extent than Alternative A.

3.8.3.2 Cumulative Effects

The cumulative impact analysis area for visual resources and dark night sky resources is the viewshed within a 15-mile distance of the analysis area. Although views can and do extend beyond 15 miles, the 15-mile distance was chosen because it defines the background distance zone (BLM Handbook H-8410-1) and is near the limit of visibility of skylined energy development facilities, such as transmission towers and wind turbines, that may be readily noticeable to casual observers. Beyond that distance, activities would have negligible, if any, contributions to cumulative visual resources impacts.

3.8.3.2.1 Visual Resources

Past, present, and reasonably foreseeable future actions and conditions (Appendix J) in the cumulative impact analysis area that have and would likely continue to adversely affect visual resources long-term include future energy development; dispersed camping; transportation upgrades; residential and commercial development; mineral extraction; abandoned mine clean ups; recreation infrastructure development; utility expansion; vegetation and timber treatments; droughts and floods associated with climate change; catastrophic wildfire; and other large-scale facilities. On the whole, alternatives B and C would contribute to beneficial impacts because of their emphasis on visual resource protection and restrictions on surface disturbing uses. Alternative A would contribute to minor adverse cumulative impacts due to less protective VRM class and SIO designations. Best management practices can be implemented to reduce the visibility of these impacts within the 15-mile visibility area from the monument.

3.8.3.2.2 Dark Night Skies and Natural Soundscapes

Past, present, and reasonably foreseeable future actions and conditions in the cumulative impact analysis area that have the potential to adversely affect night skies and natural sounds long-term include artificial lighting, construction, and daily motorized use associated with residential, commercial, and recreational developments; mineral extraction; utility improvements;

transportation upgrades; and energy development. Continued growth and development of lands adjacent to BCNM could also increase demand for energy resources, building materials, utilities, and minerals, all of which would further increase the impact to night skies and natural sounds. On the whole, alternatives B and C would contribute to beneficial impacts because of their emphasis on dark night sky and natural soundscape protection and restrictions on surface disturbing uses. Alternative A would contribute to minor adverse cumulative impacts due to less protective management objectives. These adverse impacts could be partially countered by the adoption of night sky protection ordinances and/or International Dark Sky Designations that several of the local communities have or are seeking.

3.9 Watersheds, Soils, and Water Resources

3.9.1 Affected Environment

The analysis area for water resources consists of the surface water sub-basins and groundwater aquifers underlying the area within the BCNM boundary.

Surface water resources within the BCNM are varied and include the Arkansas River and other streams, springs, and wetlands; groundwater resources include several aquifers. The monument overlaps portions of six, sixth-level hydrologic unit code (HUC) watersheds (Appendix D, Map 9). Approximately 110 miles of ephemeral, intermittent, and perennial streams drain the BCNM, generally running east to west or west to east into the Arkansas River, which runs north to south. These streams exhibit some of the highest value dry perennial and ephemeral drainages in the Arkansas Headwaters watershed. Little Cottonwood Creek, Cottonwood Creek, Spring Gulch, Sawmill Gulch, and Green Gulch all provide rare and exemplary springs and perennial flows in an arid landscape. Refer to Appendix I “Wild and Scenic River Study” for a more detailed description of the rivers, streams, and gulches within BCNM.

The primary alluvial aquifer along the Arkansas River consists of unconsolidated river-deposited sediments. Recharge to the Arkansas River alluvium is primarily through infiltration of surface water through the streambed of the river (CGS 2003).

The Arkansas River exhibits distinct spatial and seasonal variations of water quality; spatial variations occur where water quality is influenced by mineralized mine drainage and seasonal variations result from snowmelt runoff, releases of water from upstream reservoirs, and sediment-laden runoff from summer rainstorms (BLM 2015a). Factors that have affected or are affecting surface water quality include historic mining activities that resulted in the release of heavy metals and other contaminants into surface waters, and current and past soil-surface disturbing activities, such as concentrated recreational uses, that result in sedimentation in surface water bodies (BLM 2015a). Increased recreational use for activities like camping and water-based recreation has resulted in disturbances to riparian resources through trampled vegetation and modified stream banks, especially along the Arkansas River corridor. No surface waters within the BCNM are listed on the 303(d) list of Impaired Waters (CDPHE 2015a). Beneficial uses of water in the BCNM are non-consumptive and include water used by wildlife, livestock, and humans, and water used by natural vegetation and not leaving the watershed. Refer to Chapter 2 of the Planning Assessment, Section 2.1.3 “Water Resources” (BLM and USFS 2018a: pp. 75–81) for more information on existing conditions and trends.

The BLM uses Proper Functioning Condition (PFC) Assessment protocol (BLM 1998) to assess existing conditions and management effects on riparian and stream habitats. BLM Technical Reference 1737-15 (BLM 1998) defines the following PFC ratings:

- Proper Functioning Condition (PFC): assigned when a lotic riparian area has adequate vegetation, landform, or woody material capable of dissipating energy, capturing sediment, improving floodwater retention and groundwater recharge, developing root masses that stabilize streambanks, and maintaining channel characteristics.
- Functioning at-risk (FAR): assigned when the riparian area is in limited functioning condition and existing conditions make them susceptible to impairment.
- Non-Functioning (NF): assigned when the riparian area is not functioning, not reducing erosion, and overall not improving water quality.

During the field seasons of 2016–2017, BLM and USFS completed PFC assessments for riparian habitat throughout the BCNM. Within the monument boundary, perennial and intermittent stream channel reaches (and their associated riparian communities) included: not assessed (n = 1), pristine unaltered PFC (n = 4), FAR (n = 5), and NF (n = 2) (see Table 2-22 in the Planning Assessment [BLM and USFS 2018a:p. 110]). Refer to Chapter 2 of the Planning Assessment, Section 2.1.9 “Wetlands and Riparian Resources” (BLM and USFS 2018a:pp. 103–113) for more information on existing conditions and trends.

Soils in this region are predominantly Alfisols, Entisols, Inceptisols, and Mollisols. The dominant suborders are Ustepts, Ustolls, and Xerolls in valleys and on the lower mountain slopes, and Cryalfs and Orthents on the upper mountain slopes and crests. The major soil and watershed resource concerns are water erosion, steep slopes, and shallow and rocky soils. Between the available data sets “NRCS-CO-SSURGO” for BLM (NRCS 2017) and “soils_lta_psi” for USFS (USFS 2017), the data set from the USFS is more complete. Refer to Tables 3.9-1 and 3.9-2, which depict the soil types within the BCNM boundary and their basic characteristics.

Soils mapping in the BLM portion of the BCNM is relatively coarse and predominantly consists of only a few mapping units, including Rock outcrop, Rockland 15 to 60 percent slope, and Rough broken land. Each of these map units reflect the rugged setting of the monument and each of these units present strong limitations to use and development. For example, bare bedrock makes up more than ninety percent of the Rock outcrop mapping unit and sheer bluffs, crags, and talus slides characterize the terrain. Most of the geologic material in this unit is granite and other very low sediment producing materials. The other predominant unit in the western portion of the BCNM is Rockland (15 to 60 percent slope), which has similar characteristics to the Rock outcrop unit. Along the river, several areas are mapped as Gravelly alluvial land, which consists of highly stratified deposits of granitic gravel and sand (Natural Resources Conservation Service 1975). The eastern portion of the monument has more diverse soils, but still only a few soil types predominate. These include the Hechtman-Guffey, Ratake family complex, and Rogert family complex. These soil types are generally characterized by severe slope and erosion hazards.

Soil conditions are typically undisturbed due to inaccessibility, minimal resource use, and the lack of mineral extraction or development. Soils near roads and trails showed various degrees of impact from motorized and non-motorized use. Some of these impacts stretched ¼- to ½-mile downstream of their origination. Other areas without roads and trails showed slight to no impact

from livestock and wildlife. Most areas with soils impacted from livestock and wildlife were in proximity to drinking water sources (Sanchez 2017). Refer to Chapter 2 of the Planning Assessment, Section 2.1.5 “Soils and Watersheds” (BLM and USFS 2018a:pp. 61–75) for more information on existing conditions and trends.

Table 3.9-1. Description of BLM Soil Mapped Units in the BCNM boundary

Soil Map Unit Name	Runoff	Erosion Hazard of Roads and Trails Dominant Characteristic
Dominson gravelly sandy loam, 1–9 % slope	Low	Moderate
Dominson gravelly sandy loam, 9–45% slopes	Medium	Severe
Gravelly alluvial land	Low	Moderate
Hawksell sandy loam, 5–9% slopes	Low	Moderate
Manhattan sandy loam, 3–9% slopes	Low	Not rated
Rockland, 15–60% slopes	Very high	Not rated
Rock outcrop	Very high	Not rated
Rough broken land	Medium	Severe

Source: Sanchez 2017

Table 3.9-2. Description of USFS Soil Mapped Units in the BCNM boundary

Soil Map Unit Name	Runoff	Erosion Hazard of Roads and Trails Dominant Characteristic
Jodero family 0–15% slopes	Slow to medium	Moderate - mud during seasonal wet periods, erosion hazard, surface compaction, and rutting.
Cryoborolls -Cryaquolls 0–15% slopes	Medium	Cryoborolls moderate - variable, Cryaquolls - severe high water table.
Cumulic Haploborolls, 0–15% slopes	Medium	Severe- mud during seasonal wet periods, moderate load bearing strength, surface rutting, and compaction.
Quander family, 5–40% slopes	Medium	Moderate- mud during seasonal wet periods.
Granile family 40–65% slopes	Rapid	Severe- slope and erosion hazard.
Bushvalley families complex, 5–40% slopes	Medium	Slight.
Bushvalley family - Rock outcrop complex, 40–150% slopes	Rapid	Severe- slope and erosion hazard.
Parkview - Bushvalley families complex, 5–40% slopes	Medium	Parkview: moderate- mud during seasonal wet periods, surface compaction, and rutting. Bushvalley: moderate-shallow depth to bedrock.
Leadville - Tongue River families complex, 5–40% slopes	Medium	Leadville: slight. Tongue River: moderate - moderate load bearing strength.
Redfeather - Leadville, moderately deep families, complex, 5–40% slopes	Medium	Slight.
Leadville family, dry, 40–65% slopes	Rapid	Severe- slope and erosion hazard.
Nathrop - Cheadle families complex, 0–15% slopes	Rapid	Nathrop: moderate- mud during seasonal wet periods, surface rutting, and compaction. Cheadle: slight.
592Y—Cheadle family - Rock outcrop complex, 40–150% slopes	Rapid	Cheadle: severe- slope and erosion hazard. Rock outcrop: severe- cliffs and unstable talus.

Soil Map Unit Name	Runoff	Erosion Hazard of Roads and Trails Dominant Characteristic
Hechtman - Guffey families complex, 40–65% slopes	Rapid	Hechtman: severe- slope and erosion hazard. Guffey: severe- slope and erosion hazard.
Ratake family - Rock outcrop complex, 5–40% slopes	Rapid	Ratake: moderate- erosion hazard. Rock outcrop: moderate- hard bedrock.
Ratake family - Rock outcrop complex, 40–150% slopes	Rapid and slow	Ratake: severe- slope and erosion hazard. Rock outcrop: severe- cliffs and talus.
Rogert family - Rock outcrop complex, 40–150% slopes	Rapid and slow	Rogert: severe- slope and erosion hazard. Rock outcrop: severe- cliffs and talus.
Herbman family, 5–40% slopes	Medium	Slight.
Guffey - Herbman families complex, 5–40% slopes	Medium	Slight.
Legault family, 5–40% slopes	Slow	Moderate- severe erosion hazard.

Source: Sanchez 2017

3.9.2 Methods and Assumptions

The analysis area considered for characterizing conditions and trends for watersheds and soils is the BCNM boundary.

The analysis uses the following assumptions

- Increased visitation, traffic, travel, and recreational use in the monument will lead to increased disturbance and/or pressure on soil and watershed resources.
- Livestock grazing in the BCNM will continue to be managed to maintain or improve rangeland health and integrity.
- Intensifying landscape disturbance regimes (e.g., insects, pests, disease, drought, large-scale wildfire, and flash floods) pose a risk of degrading soil and watershed ecosystem services.
- Flash flood events will occur occasionally in BCNM and result in sediment contribution to the Arkansas River and potential damage to soil resources and watershed ecosystems.
- Climate change rate will continue and possibly increase (Lukas et al. 2014), resulting in impacts to soils and watershed ecosystems in the BCNM.
- Efforts to mitigate or protect soil and/or watershed resources may require trade-offs with existing uses (e.g., recreation, travel, grazing).

3.9.3 Environmental Consequences

This section describes direct, indirect, and cumulative impacts on watersheds, soils, and water resources from implementation of the management decisions in the RMP. Adverse impacts on surface and groundwater quality and quantity include increased erosion and disproportionate sediment loading in streams and may result from a variety of resource programs including management for water resources, vegetation and fuel management treatments, and recreation and travel and transportation management. Alternatives that result in more long-term surface disturbances and stipulate fewer restrictions on resource uses (e.g., recreation along the Arkansas River corridor) that might affect water resources are anticipated to result in the greatest overall adverse impact on water resources. Conversely, activities managed in accordance with the BLM

“Colorado Public Land Health Standards” (BLM 1997) and other proactive resource management practices generally mitigate adverse impacts or have beneficial effects on water resources over the long term.

3.9.3.1 Direct and Indirect Effects

3.9.3.1.1 Watersheds, Soils, and Water Resources Decisions

Water resource decisions that could affect surface water quality include new in-channel infrastructure to address sediment control, which would result in beneficial impacts to surface water quality under all alternatives by reducing in-stream sediment loads.

The avoidance of surface-disturbing activities within public water reserves, active floodplains (including the 100-year floodplain of the Arkansas River), and areas within 328-feet of streams, rivers, riparian areas, wetlands, and springs under Alternative B is likely to reduce water quality impacts from surface-disturbing activities to the greatest degree among the alternatives.

Alternative B would also allow vegetation treatments and recreational infrastructure for the benefit of watersheds, which could result in potential short-term impacts to surface water quality from surface-disturbance and runoff, but greater long-term beneficial impacts to watershed health than Alternative C. Alternatives A and C would not avoid or restrict surface-disturbing activities within public water reserves, floodplains, or surface water resources, resulting in increased potential for impacts on water quality through the removal of protective vegetation and surface-disturbing activities. Where monitoring (Appendix K 3.0) shows deterioration of soil stability, sedimentation, water quality or riparian habitat, adaptive management should be implemented to cease or mitigate the anthropogenic impacts, as well as implementing restoration efforts.

3.9.3.1.2 Vegetation, Wildland Fire Ecology, and Fuels Decisions

Vegetation treatments implemented under any alternative could decrease vegetation cover and alter soil conditions and water quality and quantity. Water quality impacts related to wildland fire management, including prescribed burns, are complex and vary based on location, fire intensity/severity, soil and vegetation cover characteristics, and topography. Physical water quality impacts from fires include erosion, sediment yield, turbidity, flooding, and increased water temperature. Fires could also introduce nutrients, basic and acidic ions, and decrease dissolved oxygen levels (Teale and Neary 2015).

Alternative B would mimic natural processes to the extent possible and would only allow non-mechanical vegetation treatment methods (including biological treatments such as targeted grazing) when necessary for the protection of life or property. Alternative C allows mechanical and biological treatments (including targeted grazing), wildfire, and prescribed burning to improve vegetation communities, reduce noxious weeds, and to generally enhance resources. Management under Alternative A would be similar to Alternative B and continues vegetation treatments to meet desired plant condition and to meet fire protection, wildlife, and riparian objectives. In the short-term, Alternative B would reduce the amount of disturbed areas from vegetation and fuel treatments, and would reduce the potential for sediment transport to nearby surface water resources compared to alternatives A and C. Prescribed fire, unplanned natural ignitions, and various vegetation treatments would reduce vegetation cover and increase sedimentation of nearby surface waters in the short term, but restoring fire-adapted ecosystems would increase vegetation cover and decrease the potential for high-intensity wildfires in the

long term. As a result, alternatives A and C would result in greater long-term benefits to water quality and quantity compared to Alternative B because they emphasize treatments that reduce the potential for large and intense wildfire that can have severe adverse impacts on watersheds.

3.9.3.1.3 Recreation and Travel and Transportation Decisions

Increased traffic, visitation, and recreation use on the Arkansas River Corridor and adjacent springs, seeps, and intermittent streams could result in degradation or depletion of water resources through disturbances to riparian vegetation and human-caused pollution.

Alternatives B and C would include a decision to develop an education program to encourage proper human and pet waste disposal along the Arkansas River, decreasing the potential for associated surface water quality impacts compared to Alternative A. Alternative C allows restrictions on human and pet waste collection and disposal off-site over 1,813 acres, while Alternative B would restrict human waste collection and require off-site disposal on 914 acres. These restrictions would result in a reduction in adverse impacts to water quality under Alternative C and Alternative B (respectively) compared to Alternative A, which lacks similar management for human and pet wastes in these monument locations. In addition, Alternative C and Alternative B include additional restrictions on where waste collection/offsite removal could be required if monitoring shows degradation or damage, further limiting the potential for adverse impacts to water quality under these alternatives compared to Alternative A. Alternative B would limit potential impacts to water and soil resources by minimizing development of new trails and other facilities. However, minimizing new trail development could result in indirect adverse impacts to soils by resulting in more proliferation of unauthorized routes that can be even more detrimental as they are often not sustainably routed and cause more erosion and degradation of vegetation. Alternative B would also generally limit access more than alternatives A and C to the benefit of soil resources, including not allowing for a new crossing of the Arkansas River and increased restrictions on camping and group sizes within the portions of the monument near the Arkansas River corridor (Monument - River East and Monument - River West MZs). Alternatives A, B, and C would all result in similar impacts to soils by closing 7,463 acres to motorized or mechanized use and limiting the rest of the BCNM to designated routes.

3.9.3.1.4 Livestock Grazing and Range Improvement Decisions

The effects of livestock grazing management on soils and water are highly variable and dependent upon site characteristics and grazing practices. Construction of certain structural range improvements, such as water developments, could result in localized surface disturbance and vegetation removal, but may improve livestock distribution in the long term in a manner that minimizes trampling and concentrated grazing on fragile soils and in springs, streams, and riparian areas. All of the alternatives include common management allowing grazing use adjustments and the construction of range improvement projects to achieve resource condition objectives, and to mitigate other user and resource conflicts. However, alternatives B and C would also inventory and assess existing range improvements, maintain existing water developments in functional condition (Alternative B), and allow for removal of structural improvements that are no longer needed. This management could result in short-term adverse impacts from the removal of range improvements; but would allow a wider range of techniques to improve livestock distribution than Alternative A and could reduce indirect impacts to springs, streams, and riparian areas. In addition, Alternative B would allow the application of setback / site-specific relocation to grazing improvements, salt blocks, recreation facilities, or other

surface disturbing activities from the edge of the riparian zone of naturally occurring seeps and springs and setbacks to spring/seep recharge zones; therefore minimizing the potential for contamination or encroachment on those areas. Alternative B also would restrict surface disturbing actions to those that would not directly impact the source area or alter recharge potential of the spring/seep. In addition, development would be limited to instances needed to achieve biological resource objectives.

3.9.3.2 Cumulative Effects

The cumulative impacts analysis area for watersheds and water resources includes the extent of surface water features (e.g., the Arkansas River, ephemeral and intermittent streams, springs, and wetlands) and groundwater resources (e.g., groundwater basins and aquifers) that intersect the analysis area. Reasonably foreseeable future actions on Federal, State, and private lands that would occur outside the scope of management decisions in this management plan would contribute to cumulative impacts on watersheds and water resources in the analysis area. In general, the more surface disturbance that occurs across the analysis area, the greater the potential impact on water quality. Cumulative adverse impacts on water resources would be intensified by broader trends in the continued surface-disturbing activities (e.g., recreation and transportation improvements), more frequent and intense wildfires, and climate variability. Reasonably foreseeable future actions that improve wildlife habitat and watersheds would contribute to cumulative beneficial impacts on water resources. Ongoing abandoned mine clean-ups in the region would also contribute to cumulative beneficial impacts on water quality.

3.10 Wildlife and Fish

3.10.1 Affected Environment

The analysis area for aquatic wildlife is the 7.1 miles of the Arkansas River within the BCNM boundary, as well as all tributaries that flow into the Arkansas River within the monument boundary. The area for terrestrial and avian wildlife and special status species is the BCNM boundary, with reference to species habitat connectivity extending beyond the monument boundary as described by the BASI on habitat. The temporal scale for all wildlife species is the planning horizon (20 years).

3.10.1.1 Fish and Aquatic Wildlife

Fish communities play an essential role in the ecological integrity of aquatic systems (Scott et al. 2005). The cold waters of the Arkansas River support a Gold Medal fishery—granted by the Colorado Wildlife Commission in 2014 for the density and size of trout present in the river—and both the Arkansas River and Cottonwood Creek provide important spawning habitat for trout. Within the BCNM, brown trout (*Salmo trutta*) are a naturally sustained population and not stocked. Rainbow trout (*Oncorhynchus mykiss*) populations crashed in the 1990s due to whirling disease, and are still recovering with the aid of CPW introducing disease-resistant strains and stocking periodically (Smith and Hill 2000). The river also provides habitat for a number of non-game fish species, including white suckers (*Catostomus commersonii*), fathead minnows (*Pimephales promelas*), and longnose dace (*Rhinichthys cataractae*).

The only amphibian species documented in the BCNM is tiger salamander (*Ambystoma tigrinum*), which is found in Cottonwood Creek (Olson 2017b). Northern leopard frog

(*Lithobates pipiens*), a USFS species of concern, has not been documented within the BCNM, and limited suitable habitat for the species is present. Despite its mention in Presidential Proclamation 9232, boreal toad (*Anaxyrus boreas boreas*) is not documented, and is unlikely to occur, in the BCNM.

Macroinvertebrates are an integral part of a healthy aquatic ecosystem, providing an important food source to numerous wildlife species, including fish, birds, and bats. They are an indicator of the overall health of aquatic ecosystems (Smith et al 2005). Baseline aquatic insect sampling was conducted by USFS between October 2015 and June 2017, following the designation of the BCNM. Over 60 aquatic insect species were identified within the Arkansas River corridor (CPW, BLM, and USFS 2019).

The diversity of species identified within the Arkansas River indicates a relatively healthy ecosystem; however, threats to water quality and ecological integrity are present due to recreational and commercial uses of the river and surrounding corridor. For information on existing conditions and trends in addition what is summarized above, refer to Chapter 2 of the Planning Assessment, Section 2.1.10 “Aquatic Wildlife” (BLM and USFS 2018a:pp. 113–118).

3.10.1.2 Avian and Terrestrial Species

Approximately 134 wildlife species have been recorded in the BCNM: 23 species of mammals (including 5 bat species), 97 species of birds, 3 species of reptiles, and 1 species of amphibian (Shively and Rustand 2017). The following description of the affected environment for these species includes a discussion of game species occurring within the monument and the various habitat types present that are used by game and non-game species alike.

Big game species present in the BCNM for which CPW maintains population trend data include black bear (*Ursus americanus*), mountain lion (*Puma concolor*), bighorn sheep (*Ovis canadensis*), mule deer (*Odocoileus hemionus*), and elk (*Cervus canadensis*):

- **Black bears** in analysis unit B-14 within the BCNM occur at low densities due to limited foraging habitat; higher densities occur in the summer at higher elevations east of the BCNM. Black bear populations within the monument and surrounding areas are considered stable (Grigg 2015).
- **Mountain lions** are currently managed by CPW to maintain a healthy, self-sustaining population that is in balance with suitable habitat while minimizing game and livestock damage complaints (Dreher 2004). The latest population estimate was 431 to 452 individuals in the L-11 management area, which encompasses the BCNM and includes 5,439 square miles of central Colorado (Dreher 2004).
- CPW estimates that approximately 40 **bighorn sheep**, part of the S-47 herd, use suitable habitat in the BCNM (Grigg 2017).
- Trends for **mule deer** in the game management unit encompassing the BCNM, Area D-16, show a gradual decline in numbers since the 1990s. Mule deer summer and winter range occur within the monumnet boundary (CPW 2017).
- The BCNM contains winter concentration and production areas for **elk** herd E-22. Generally the E-22 elk herd has been above population objectives, ranging from 3,615 to 3,915 elk over the past 10 years, with a target population of 3,500 (CPW 2017).

A variety of habitat types support non-game wildlife species, as well:

- **Riparian habitats** comprise 3.5 percent (764 acres) of lands within the BCNM, and are associated primarily with the Arkansas River and its major tributaries, such as Cottonwood Creek. Riparian habitats support a high diversity of species including the American dipper (*Cinclus mexicanus*), great blue heron (*Ardea herodias*), and mink (*Neovison vison*). Riparian shrubs provide habitat to nesting birds such as flycatchers, yellow warbler (*Setophaga petechia*) and Lewis' woodpecker (*Melanerpes lewis*). Mature cottonwood trees provide important perch sites for foraging bald eagles (*Haliaeetus leucocephalus*) and belted kingfishers (*Megasceryle alcyon*). Cliffs and banks adjacent to the river provide nesting sites for a number of species of swallows and white-throated swifts (*Aeronautes saxatalis*).
- **Grass and forb habitats** comprise 6 percent (1,233 acres) of the BCNM, occurring on terraces above the Arkansas River and in the northeast corner of the monument. Wildlife species diversity in these habitats is typically lower than in riparian habitats, but these habitats still provide important nesting habitat for grassland and scrub species such as vesper sparrow (*Pooecetes gramineus*) and western meadowlark (*Stunella neglecta*). Grass and forb habitats can also support mammals such as Gunnison prairie dog (*Cynomys gunnisoni*) and other rodent species, providing an open hunting ground for raptors and other predatory species. **Mixed conifer forest habitat** is the second-most common in the BCNM, comprising nearly 40 percent (8,148 acres). Ponderosa pine, mixed with lodgepole pine and juniper occurs below 9,000 feet amsl, providing nesting habitat for northern goshawk (*Accipiter gentilis*), flammulated owl (*Psiloscops flammeolus*), common nighthawk (*Chordeiles minor*), mountain bluebird (*Sialia currocoides*), and multiple species of woodpeckers. Mature ponderosa pine habitats provide habitat for Abert's squirrels (*Sciurus aberti*) and tree-roosting bats. Spruce-fir forests primarily occur above 9,000 feet amsl, with old-growth limber pine occurring in some areas of the monument. These cool and moist forests provide habitat for avian species such as Clark's nutcracker (*Nucifraga columbiana*), Stellar's jay (*Cyanocitta stelleri*), olive-sided flycatcher (*Contopus cooperi*), and Cooper's hawk (*Accipiter cooperii*).
- **Piñon-juniper woodland habitat** is the most widespread habitat within the BCNM, covering nearly half (10,145 acres) of the land. This habitat type mostly occurs at elevations below 7,500 feet amsl, serving as a transition zone between the riparian corridors and high elevation forests. A number of bird species nest and forage within piñon-juniper habitats, including loggerhead shrike (*Lanius ludovicianus*), piñon jay (*Gymnorhinus cyanocephalus*), Woodhouse's scrub jay (*Aphelocoma woodhouseii*), and green-tailed towhee (*Pipilo chlorurus*). Forested canyons in the monument area provide habitat for avian species, such as canyon wren (*Catherpes mexicanus*), and roosting sites for bats.

Refer to Chapter 2 of the Planning Assessment, Section 2.1.11 "Terrestrial and Avian Wildlife" (BLM and USFS 2018a:pp. 118–133) for more information on management indicator species.

3.10.1.3 Special Status Wildlife Species

Special status wildlife species include all species currently listed as endangered, threatened, proposed, or candidate species under the Endangered Species Act, as a USFS Sensitive Species, and those listed on the BLM Sensitive Species List for Colorado. Special status wildlife species

with the potential to occur in the BCNM include 28 species: 9 mammals, 16 birds, 1 amphibian, and 2 invertebrates. Of these species, 15 are USFS Sensitive, 2 are BLM Sensitive, 9 are BLM Sensitive and USFS Sensitive, and 2 are listed as threatened under the Endangered Species Act. The two listed threatened species, the Mexican spotted owl and Canada lynx, have not been documented in the BCNM. Although models indicate that suitable habitat for both species is present within the monument, these habitats are of marginal quality to sustain either species (Appendix D, Map 24). Refer to Chapter 2 of the Planning Assessment Section 2.1.12 “Special Status Species” for more information on special status species and BLM and USFS policies regarding special status species management (BLM and USFS 2018a:pp. 133–151).

3.10.2 Methods and Assumptions

The analysis area for determining the effects of the alternatives on aquatic wildlife is the 7.1 miles of the Arkansas River within the BCNM boundary and all tributaries that flow within the monument boundary. The analysis area for determining the effects of the alternatives on terrestrial and avian wildlife and special status species is the BCNM boundary with reference to species habitat connectivity extending beyond the monument boundary as described by the BASI on habitat. The temporal scale for all wildlife species is the planning horizon, or 20 years.

The analysis uses the following assumptions:

- The BCNM is one of the least disturbed riparian communities along the Arkansas River and has an intact biotic community. The ecological conditions of wildlife and special status species habitats are within the NRV; but stressors (historic overgrazing, recreational use) to some of these habitats (e.g., riparian, grass, and forb) have degraded habitat in certain areas of the monument. The trend of increasing recreational use as a stressor to wildlife habitats is expected to continue.
- Disturbance of a key or critical component of a species’ habitat would result in adverse impacts to the wildlife species. The degree of negative effects is dependent on the importance of the habitat component to individuals and to the maintenance of the population.
- Habitat for game species will be managed in coordination with CPW herd objectives, and for non-game species by CPW species-specific plans, which will include various species population trend data and seasonally important habitat boundaries (e.g., elk winter concentration areas, mule deer summer range, recent raptor nest locations, or extent of suitable Mexican spotted owl habitat). Fish and wildlife management is the jurisdiction of the State.
- The Arkansas River will continue to be a popular commercially rafted river and as such, will continue to introduce threats to wildlife and special status species such as pollution, introduction of aquatic and terrestrial invasive species, trampling of aquatic and riparian vegetation, localized stream bank erosion, and increased sedimentation that could reduce in-stream dissolved oxygen levels and increased turbidity. As a result, availability of habitat for fish, including spawning habitat, could fluctuate and riparian habitat has and will continue to experience increased levels of human activity, especially during summer months, which has and will continue to lead to displacement of fish and wildlife species from certain areas.

- Activities that will disturb wildlife species, including increased recreational activity and subsequent human-wildlife interactions, will occur under each of the alternatives. The degree of displacement will depend on the location, extent, timing, or intensity of the disruptive activity. Wildlife species that have limited habitat or low tolerance for human presence and/or habitat modification are more likely to be displaced.
- Noxious weeds will continue to be introduced and spread as a result of motorized and mechanized vehicle travel, recreational activities, wildfire, wildlife and livestock grazing and movements, and surface-disturbing activities. This will result in habitat degradation for some wildlife species.
- Livestock grazing within the BCNM will continue to be managed in accordance with existing laws, consistent with Presidential Proclamation 9232, with adjustments allowed to achieve resource objectives to improve ecosystem health, reduce conflict with other resources, and best protect vegetative resources and community values.
- Increasing frequency of drought and warming temperatures could increase the frequency and severity of wildfires, reducing suitable wildlife habitat. These conditions could also exacerbate insect infestations resulting in large-scale die-offs of trees and subsequent alteration of forest structure, which would particularly affect wildlife species using pinyon-juniper and mixed conifer habitats. Milder winters and earlier spring thaws could alter the timing of life cycle events (e.g., hibernation, migration), which can affect food resource availability for many wildlife species.

3.10.3 Environmental Consequences

This section describes direct, indirect, and cumulative impacts on fish and aquatic wildlife, avian and terrestrial species, and special status wildlife species from implementation of the management decisions in the RMP. Impacts on these resources result from resource and resource use decisions that affect the BLM and USFS's ability to manage these species' habitats and populations. Management actions, standards and administrative designations and allocations for allowable uses that remove, degrade, fragment, or disturb wildlife habitat within the BCNM are generally considered adverse while beneficial impacts would result from actions that conserve or improve habitat conditions and lead to increased sustainability of species populations.

3.10.3.1 Direct and Indirect Effects

3.10.3.1.1 Wildlife and Fish Decisions

Wildlife and fish decisions, including allowing for mitigation including application of appropriate BMPs for public activities in a variety of wildlife and special status species habitat, would have beneficial impacts on wildlife species and wildlife habitat under all alternatives.

Alternative A lacks many of the seasonal use and trail development prohibitions and would result in the greatest adverse impacts on wildlife species from habitat degradation and potential disturbance from human activity during sensitive time periods.

Alternative B would result in the greatest beneficial impacts on wildlife compared to the other alternatives. Alternative B would prohibit new trail development in big game winter range and apply seasonal restrictions for climbing, camping, and other incompatible recreational access specific to peregrine and prairie falcon, red-tailed hawk, and other non-special status raptor

nesting. These seasonal restrictions would also benefit Rocky Mountain bighorn sheep concentration and production areas.

Alternative C would result in greater impacts than Alternative B because it would allow new trail development in big game winter range but would apply seasonal use prohibitions during sensitive seasons instead of prohibiting trail development in this area. Alternative C would also restrict climbing access around raptor nesting areas, but this would be conducted on an annual basis and would not focus specifically on Railroad Gulch and other sites determined through inventory as described under Alternative B. Alternative C would not restrict camping or any other recreational access seasonally.

Alternative A would have the greatest potential for increasing human disturbance on bighorn sheep, raptors, big game, and other special status species during crucial seasonal periods, which could affect the ability to restore, maintain, or enhance these priority wildlife species habitats.

3.10.3.1.2 Special Designations Decisions

Decisions to maintain special designations generally would benefit wildlife species and their habitat by emphasizing the preservation and conservation of other resource values that contribute to wildlife habitat within the BCNM. Impacts to Wildlife and Fish from Special Designations decisions would be similar to those described under 3.7.3.1.1.

Alternatives A and B would result in the greatest benefit to wildlife species because they would determine Arkansas River Segment 2 as a suitable segment for designation as a WSR and apply interim protective management. Alternative C would result in less beneficial impacts because it would not determine the Arkansas River Segment 2 as a suitable WSR segment, dropping interim protective measures.

3.10.3.1.3 Cultural Heritage, Tribal Values and Uses Decisions

Cultural resource decisions in the BCNM focus on developing interactive sites for RMZs, allowing educational programs within designated trail systems, and establishing programs to restore, stabilize, protect, and interpret historic and prehistoric resources.

Alternative B would result in a greater potential for increases in human disturbance of wildlife habitat and populations because it would allow educational programs in designated trail systems and would allow for collaborative programs focused on historic and prehistoric resources. These educational and institutional programs could result in localized disturbance of priority wildlife species, including raptors and big game, and result in larger groups of people within the BCNM. Alternative C would have less potential for adverse effects and Alternative A would have the least based on the management actions and standards for cultural heritage, tribal values and uses.

3.10.3.1.4 Lands with Wilderness Characteristics Decisions

Management to protect wilderness characteristics would generally result in beneficial impacts on wildlife by limiting the intensity of recreational activities, vehicle use, and mechanized travel that can disturb wildlife behavior and by limiting surface-disturbing activities that can degrade wildlife habitat. Refer to Section 3.10.3.1.8 “Recreation Decisions” for a description of recreational travel that can result in adverse impacts on wildlife.

Alternative B would result in the greatest beneficial impacts on wildlife species and habitat by managing the most acreage (625 acres) to protect or maintain wilderness characteristics. Rocky

Mountain bighorn sheep ranges overlap the most with lands with wilderness characteristics; 194 acres of production area, 282 acres of summer concentration area, and 138 acres of winter concentration area occur within land with wilderness characteristics (Table 3.1-3). Mule deer would also receive some benefits in areas where migration corridors (23 acres) and winter concentration area (89 acres) overlaps with lands with wilderness characteristics.

Alternative B would further benefit big game species and any other wildlife and special status species that occur within the Railroad Gulch and Browns Canyon North-Ruby Mountain areas by implementing additional management actions and recreation restrictions to protect wilderness characteristics. Alternative A and C have no similar actions and would result in reduced beneficial impacts on wildlife species and habitat.

3.10.3.1.5 Vegetation, Wildland Fire Ecology, and Fuels Decisions

Vegetation management decisions would have both direct and indirect beneficial as well as adverse effects on wildlife species and habitat. Long-term, direct beneficial impacts include management of non-native or noxious plants, restoration actions, and vegetation treatment methods, which would largely enhance priority wildlife and special status species habitats. These vegetation management decisions would result in short-term adverse effects on wildlife and habitats by temporarily disturbing surface lands during treatments and temporary increases in human presence and noise.

In general, management for vegetation resources under Alternative B would be more restrictive than Alternative C because it would prohibit the use of non-native or noxious plants and seed for restoration efforts. This would benefit native wildlife species and their habitat. However, Alternative B would not allow terrestrial vegetation treatments unless necessary for the protection of life or property, whereas Alternative C would allow a wide range of vegetation treatments to respond to potential fire risk (e.g., prescribed burning, hand thinning, mechanical treatments). Allowing for limited vegetation treatments under Alternative B would benefit migratory birds and raptors because it would be more likely that standing dead trees would remain as habitat features for these species. Conversely, the treatments options allowed under Alternative C would result in a greater benefit to some species. For example, these methods may remove standing dead trees, which could create temporary openings that are beneficial to mule deer and elk. These openings could lead to understory regeneration, which would indirectly benefit lynx habitat by providing suitable conditions for snowshoe hare, their primary prey source. The mechanical and biological treatment methods as well as targeted grazing could result in greater reductions in noxious and invasive species that would benefit all wildlife and special status species habitats.

In summary, management for vegetation resources under Alternative C would be the most beneficial and would result in the greatest ability to restore, maintain, or enhance priority wildlife and special status species habitat.

Wildland fire ecology and fuels decisions would consist of methods of fire treatment to avoid and/or manage wildfires. These activities would continue to drive the modification and removal of wildlife habitat within the BCNM in the future as increased frequency of drought and warming temperatures increase the frequency and intensity of wildfires. Fire treatments, including mechanical, biological, and prescribed fire treatments, and natural ignitions, would have direct, short-term adverse impacts on some wildlife and special status species habitat by removing vegetative cover. In the long-term, these treatments would reduce fine fuels and ladder

fuels that increase the potential for uncharacteristic wildfires, which destroy forest habitat for terrestrial wildlife species and result in increased runoff in streams and degraded aquatic species habitat. These treatments also restore natural wildfire regimes, allowing landscapes to produce healthy and resilient vegetation communities, benefitting wildlife and special status species. The effect of fuel treatments may vary by species and habitat. For example, mechanical thinning methods in pinyon-juniper habitat has been shown to reduce species that prefer a very dense mosaic of pinyon-juniper such as white-breasted nuthatch, mountain chickadee, juniper titmouse, and pinyon jay (Gallo and Pejchar 2016). However, fuels treatments in overly dense and regularly aged conifer stands are likely to result in a beneficial response from a variety of bird and small mammal species that utilize forested habitats (Kalies, Chambers, and Covington 2009; Stephens et al. 2012).

Alternative C would have a greater potential for beneficial impacts on wildlife and special status species habitat because it would allow for the full suite of available fire treatment techniques, while Alternative B would only allow for the use of natural ignitions.

3.10.3.1.6 Visual Resources, Night Skies, and Natural Soundscapes Decisions

Management actions for visual resources, night skies, and natural soundscapes would include managing for VRM class designations on BLM-administered surface lands or SIO designations on USFS-administered surface lands. Minimization of visual impacts through redesign of activities for the preservation of scenic values in visually sensitive areas may indirectly benefit habitat for wildlife and special status species by restricting the types of development activities within certain areas, which could result in less avoidance by some wildlife species. These beneficial impacts would be greatest under Alternative B, which manages a greater amount of BLM- and USFS-administered surface lands as VRM Class I and SIO Very High designations, followed by alternatives C and A, respectively.

3.10.3.1.7 Watersheds, Soils, and Water Resources Decisions

Watershed, soil, and water resource decisions would benefit wildlife, aquatic and special status species habitat through improving non-functioning and functioning-at-risk riparian and soil conditions throughout the BCNM. Alternative B would result in the greatest beneficial impacts because it would apply setbacks or specifically avoid surface-disturbing activities within certain portions of floodplains to avoid contamination to springs and seeps. Alternative B also would limit new water development that would directly impact the source area or significantly alter the recharge potential, and that would not help to achieve biological resource objectives. This would benefit aquatic, riparian, and adjacent upland species and would reduce the potential for direct and indirect impacts in areas that provide important habitat values. Alternative C would result in less beneficial impacts, followed by Alternative A.

3.10.3.1.8 Recreation Decisions

Outdoor recreation on public lands is at an all-time high and the population of Colorado is increasing. As a result, recreation demand is expected to increase in the BCNM. Different recreation activities and their intensity on the landscape would have varying degrees of impacts on wildlife and special status species habitat. Certain habitat types, particularly breeding, nesting, and wintering habitat, is be more sensitive to increases in human activity.

Decisions that increase recreation activity, or that prioritize management of recreation objectives over wildlife habitat objectives, would generally result in adverse impacts on wildlife. The

recreational activities themselves would result in adverse impacts on wildlife and special status species by degrading habitat, disturbing wildlife, altering wildlife behavior, and increasing stress. Specific impacts on wildlife from recreation activities include the following:

- Recreational travel, especially motorized vehicle use, can cause direct mortality of small mammals through collisions; increase potential for harvest of big game (both legal and illegal) increase noise, disturbance, and stress to animals; alter movement patterns; and result in avoidance of high-use recreational travel areas or routes by wildlife (Switalski and Jones 2012). The use of snowmobiles in winter seasons could have adverse effects on mule deer and elk winter concentration areas and migration corridors. However, conditions and demand for snowmobile use in BCNM are very limited.
- Trail-based recreation (e.g., hiking, horseback riding) can degrade habitat by increasing erosion and disturbing soils and vegetation. These activities can also provide additional vectors for the spread of non-native invasive and noxious plant species, alter the species composition of native plant communities, disrupt wildlife behaviors, and result in habitat avoidance. Although some species may habituate to increased human presence, others (especially special status species such as Canada lynx and Mexican spotted owl) avoid it (Larson et al. 2016; Quinn and Chernoff 2010; Fairbanks 2002; Knight and Gutzwiller 1995).
- Rock climbing can degrade habitat on and below climbing routes and disturb nesting raptor and other bird species (National Park Service 2016; Holzman 2013). It can also result in disturbance to bighorn sheep and population declines (Papouchis et al. 2001).
- Camping and prolonged human presence can result in beneficial impacts on some species that readily habituate to human presence and capitalize on increased food supply provided by humans; however, it can also degrade habitat by trampling and denuding vegetation, disturbing soils, and disrupting long-term animal behavior (Samia et al. 2015; Cole and Landres 1995).
- Target shooting with firearms would likely increase with the increasing regional population. More heavily used areas would experience adverse impacts on wildlife due to exposure to hazardous metals that accumulate in the soil and contaminate near-by water sources.

In general, Alternative B would have the greatest beneficial impact to wildlife, fish, and special status species by limiting disturbance and potential habitat degradation effects from human presence associated with recreation activities. Alternative B and C would implement an educational program to encourage waste disposal along the Arkansas River and require waste collection to the benefit of wildlife, aquatic and special status species by reducing some of the adverse effects of increased human presence and water quality impacts on these species. Alternative B would prohibit target shooting within the BCNM, prohibit development of an Arkansas River crossing within the monument, apply the most limits on camping and trail development and group size, and apply the most seasonal restrictions to protect sensitive habitat. Alternatives A and C would also result in beneficial impacts to wildlife similar to Alternative B, but to a lesser degree by generally allowing greater access and managing recreation settings for a higher level of activity and group sizes. However, Alternative C, by allowing for more facility visitor services and facility development to address the anticipated continued increase in recreation activity in relatively high-use areas (e.g., Hecla Junction, Aspen Ridge, Ruby

Mountain), may result in fewer adverse impacts to fish and wildlife species habitat than alternatives A and C where management without these services and facilities would potentially allow for more resource degradation from dispersed use and unauthorized trail/route creation.

3.10.3.1.9 Travel and Transportation Management Decisions

Travel and transportation management decisions would have both beneficial and adverse impacts on wildlife and special status species and their habitats. Land designations related to travel management (e.g., open, closed, limited to designated routes), would have various impacts on terrestrial wildlife species based primarily on the amount of motorized access available to specific areas. Refer to Section 3.10.2.1.9 “Recreation,” for a discussion of potential impacts from motorized vehicle use. Mechanized vehicle use (e.g., mountain bikes) would also increase the potential for disturbing wildlife and, to a lesser degree, direct mortality from collisions. Alternatives A, B, and C would all result in similar impacts to wildlife by closing 7,463 acres to motorized or mechanized use and limiting the rest of the BCNM to designated routes.

Secretarial Order 3376 (DOI 2019) authorized Class 1, 2 and 3 electric bicycles (e-bikes) on all trails where mechanized use is authorized. The authorization of e-bikes will likely increase the distance users can travel and may increase the number of users on the landscape. The effects of e-bikes on wildlife are largely unknown. Because e-bikes are very similar to bicycles, it is reasonable to assume that impacts from e-bikes would be similar to bicycles. BCNM may see an increase in use as it would be easier to access more remote areas, resulting in greater impacts to wildlife.

3.10.3.1.10 Range and Livestock Grazing Decisions

Current management allows for livestock grazing on 17,175 acres of Federal land within BCNM. Livestock grazing can result in beneficial and adverse impacts on wildlife habitat and varies across habitat types (USFWS 2018). Effects of livestock grazing on wildlife are dependent on animal type and distribution, grazing timing, duration, and frequency. Local site conditions, including soil type, precipitation, plant communities, and the wildlife species of concern are additional variables. (Briske et al. 2008; Heitschmidt and Walker 1996; Krausman et al. 2009; Teague et al. 2008; Veblen et al. 2015; Veblen and Young 2010).

Wildlife species adapted to open habitats may benefit from livestock grazing while other species that require increased vegetation cover may be adversely affected (Schieltz and Rubenstein 2016). Livestock grazing can have direct adverse effects on ground dwelling bird species including destruction of habitat, trampling of eggs, nest abandonment, and reduced food availability (Beck and Mitchell 2000). Ungulate populations may be adversely influenced by interference competition with grazing livestock and changes in forage quantity and quality. Small mammal populations show mixed reactions to livestock grazing activity (Schieltz and Rubenstein 2016). Historic livestock grazing resulted in limited degradation of some wildlife habitat (e.g., riparian, grass, and forb) in certain areas of the BCNM.

Livestock grazing under each alternative would be managed consistent with BLM and USFS existing law a guidelines, and would also be based on BASI and BMPs (on USFS lands) to achieve and maintain healthy rangelands. This management would limit any potential adverse impacts to wildlife or wildlife habitat from grazing. Effects from livestock grazing management under alternatives B and C would be the same, each allowing the ability to adjust allotment management to meet monument objectives and inventorying and assessing existing range

improvements to remove those no longer needed or in need of improvement. Alternative A would result in the least potential beneficial impacts to wildlife by continuing existing management and reducing the likelihood of improved wildlife habitat where degradation from livestock grazing has occurred.

3.10.3.1.11 Lands and Realty Decisions

Lands and realty decisions affecting fish and wildlife include ROW decisions and the use of UASs. Refer to Section 3.14 “Lands and Realty” for a description of the types of ROW authorizations existing in the BCNM. The types of impacts to fish and wildlife that could result from ROW authorizations include fragmenting habitat and, during ROW facility construction, (e.g., utility) temporary disturbance of wildlife from human activity and impacts to wildlife habitat. Managing BCNM as a ROW exclusion area under Alternative B would preclude adverse impacts to wildlife from ROWs. Alternatives A and C would minimize potential impacts by managing BCNM as a ROW avoidance area, considering siting, stipulations, BMPs, and other mitigation measures to the greatest extent possible, and authorizing ROWs only when stipulations are present to minimize adverse impacts and protect the monument ROWs. Under Alternative C, allowing casual-use landing and takeoff of UASs in portions of the BCNM would result in a higher potential to disturb wildlife, especially raptor species, than under Alternative B which would prohibit casual use landing and takeoff of UASs.

3.10.3.2 Cumulative Effects

The area for cumulative effects on wildlife and fish is the analysis area with consideration given to species habitat connectivity extending beyond the BCNM boundary. Cumulative effects on wildlife and fish considers incremental impacts of the decisions in the alternatives, impacts from all past and present actions, and impacts from reasonably foreseeable future actions. The analysis focuses on reasonably foreseeable actions anticipated to have impacts similar to the kinds of impacts identified for implementing the alternatives. Due to the programmatic nature of an RMP and cumulative assessment, the analysis in this document is primarily broad and general. Refer to Appendix J for a list of past, present, and future plans and projects that could result in cumulative effects with the alternatives.

In general, beneficial impacts to wildlife and fish would result from decisions in the alternatives through management actions and protections to maintain and restore habitat and manage resource uses to limit adverse effects. These impacts would contribute incrementally to the cumulative beneficial impacts to wildlife and fish from currently and reasonably foreseeable management actions on surrounding BLM, USFS, and State lands to maintain and improve wildlife habitat and limit or mitigation adverse effects from human activity.

These beneficial cumulative effects will contribute to mitigating adverse cumulative effects from past and present actions with adverse effects to wildlife and fish populations from continued human development spurred by population growth in the Upper Arkansas River Valley and across the state. Future human population growth will result in the continued expansion of urban and residential development focused in existing population centers and surrounding areas. Continued urbanization and increasing use and access of public lands could increase the potential for human-related disturbance, habitat degradation, and habitat avoidance by wildlife species (Dreisbach 2016). Continued expansion of infrastructure through development of highway and county road improvement projects, utility corridors, and expansion of urban and residential areas

would adversely affect the conservation of existing contiguous wildlife habitats adjacent to the BCNM and would contribute to habitat fragmentation of wildlife habitat. However, highway improvement projects that include measures to provide connectivity and mitigate collision hazards (e.g., highway underpasses) will mitigate these adverse effects.

The continuation of natural processes will also result in cumulative effects degrading wildlife habitat. For example, certain areas of mixed conifer forest stands within and surrounding BCNM are dense enough to be outside a NRV, making them more vulnerable to the effects of drought, pests (e.g., spruce mountain pine beetle), and uncharacteristically large and intense wildfires. These trends will continue to have a cumulative adverse effect on wildlife habitat.

3.11 Recreation

3.11.1 Affected Environment

Recreation and public access in and around the BCNM is one of the main human uses of the area. Recreation opportunities range across the spectrum, from primitive backcountry uses to more structured opportunities, such as developed camping or commercial rafting along the Arkansas River within the AHRA. Visitors enjoy activities such as hiking, backpacking, hunting, fishing, horseback riding and packing, snowshoeing, OHV use, camping and picnicking, viewing scenery and wildlife, mountain biking, mountaineering, whitewater boating, bouldering, and rock climbing. Relatively undeveloped areas, such as upland of the river corridor, provide opportunities for people to experience solitude and adventure in a natural environment. The Arkansas River, where the highest levels of use occur, is one of the Nation's most popular locations for whitewater boating and one of the most commercially rafted rivers in the United States (CPW and BLM 2017).

Developed recreational infrastructure is concentrated at Ruby Mountain Campground (in the northwestern corner of the BCNM) and Hecla Junction (in the southwestern corner of the BCNM), both of which are used heavily for commercial and private river access. The AHRA Management Plan divides the Arkansas River into segments/sections for the purpose of monitoring recreational outcomes and capacities. Segment 2 includes river sections from Buena Vista Whitewater Park to Salida East. Segment 2 is the most heavily used portion of the river for commercial rafting trips; it offers Class III (moderately difficult) and IV (difficult) rapids and a vertical drop of 30 feet per mile. Other activities along the river corridor include fishing, a considerable amount of private kayaking and rafting, overnight camping trips, hiking, picnicking, wildlife watching, and rock-hounding at the AHRA Ruby Mountain and Hecla Junction Recreation Sites. Ruby Mountain provides the primary access to non-motorized trails within the BCNM, including the River Bench, Turret, and Catkin Gulch trails, as well as rock-hounding access. Upland recreation is focused along National Forest System Trail (NFST) 1434A and NFST 1434 and National Forest System Road (NFSR) 184 (Turret Road) and NFSR 185 (Aspen Ridge Road). These routes offer opportunities for dispersed camping, sightseeing, vehicle touring, and OHV activities. Refer to Section 3.12 "Travel and Transportation Management" for more information on the travel route system in the BCNM.

Recreation management areas (BLM) / management areas (USFS) are the primary means for managing recreational use of BLM- and USFS-managed lands. SRMAs are administrative units managed to protect and enhance a targeted set of activities, experiences, and benefits. The

existing Arkansas River SRMA, as designated in the 1996 RGRMP, extends from the headwaters of the Arkansas River near Leadville to Cañon City. The SRMA encompasses all BLM land in the BCNM. The RGRMP identifies the SRMA's objectives to provide and maintain a variety of recreational opportunities and settings (from rural to semi-primitive non-motorized). Additionally, facility development will reduce user conflict and be provided to enhance visitor health and sanitation (BLM 1996). USFS management area prescriptions are summarized below and range from rural to semi-primitive non-motorized recreation opportunities.

- 2B: Rural and roaded-natural recreation opportunities. Motorized and non-motorized recreation activities such as driving for pleasure, viewing scenery, picnicking, fishing, snowmobiling, and cross-country skiing are possible. Conventional use of highway-type vehicles is provided for in design and construction of facilities. Motorized travel may be prohibited or restricted to designated routes, to protect physical and biological resources.
- 4B: Recreation and other human activities are regulated to favor the needs of the designated species. Roaded-natural recreation opportunities are provided along USFS arterial and collector roads. Local roads and trails are either open or closed to public motorized travel. Semi-primitive motorized recreation opportunities are provided on those local roads and trails that remain open, semi-primitive non-motorized opportunities are provided on those that are closed.
- 4D: Recreational opportunities available are semi-primitive non-motorized and motorized or roaded natural. Some temporary or seasonal road and area use restrictions are implemented to prevent disturbance of wildlife or improve hunting and fishing quality.
- 5B: New roads other than short-term temporary roads are located outside of the management area. Short-term roads are obliterated within one season after intended use. Existing local roads are closed and new motorized recreation use is managed to prevent unacceptable stress on big game animals during the primary big game use season.
- 6B: Dispersed recreational opportunities vary between semi-primitive non-motorized and roaded natural.

A comprehensive analysis of visitor use has not been completed and use data is limited. Therefore, it is difficult to calculate total visitation numbers to the BCNM and predict future use levels. The BLM uses the Recreation Management Information System (RMIS) to track and report recreation visitation. RMIS visitation estimates are limited to sites; therefore, dispersed recreation is not counted. Direct monitoring by BLM staff must focus on areas of greatest use or conflicts, with the result that more remote locations within the analysis area may not receive adequate monitoring. In addition, many popular trails and use areas are not designated, making it difficult to accurately determine the amount of recreational use these areas receive. Therefore, the numbers recorded for specific activities in specific areas may not accurately reflect the actual level of use. The AHRA portion of the BCNM has credible information on visitation by river activity and commercial vs. private boating. Visitor access points are limited on USFS lands and use levels are mostly undocumented. Refer to Chapter 2 of the Planning Assessment, Section 2.2.1 "Recreation" (BLM and USFS 2018a:pp. 174-198) for more information on available visitor count data and its limitations.

Population forecasts, general recreation trends for Colorado and the Nation, and resource specialist knowledge point to higher future use trends to areas like BCNM. Nationally, outdoor recreation on public lands is at an all-time high. In 2016, almost half (48.8 percent) of all

Americans participated in some type of outdoor recreation activity (Outdoor Foundation 2017). This equates to 144.4 million Americans, who went on a collective 11 billion outdoor outings. Colorado residents are more likely to participate in day hiking and camping than the average American (OIA 2017). Within the State of Colorado, 90 percent of residents that completed a 2013 survey indicated they had participated in a recreation activity in Colorado (CPW 2014). Further, tourism is the second largest industry in Colorado and a considerable portion of Colorado's tourism economy is reliant on outdoor recreation resources and public lands (Western Governors' Association 2012). As of 2017, outdoor recreation in Colorado generates \$28 billion in consumer spending annually and creates 229,000 direct jobs, which translates into \$2.0 billion in State and local tax revenues (OIA 2017). Refer to Section 3.15 "Social and Economic Conditions" below for additional details.

Higher visitation and access rates may increase impacts on sensitive areas, including winter range and breeding areas for raptors and big game. Non-system social trails along the river result in habitat degradation, increased sedimentation, and disturbance to cultural sites. A proliferation of non-system trails near the Ruby Mountain trailhead for gem hunting also increases sedimentation. Increases in motorized and non-motorized recreation, both private and commercial, lead to vegetation degradation, invasive species spread, erosion/sedimentation, and wildlife disturbance. In addition, full-size vehicle camping and full-size recreational vehicles are increasing the extent of ground disturbance and expanding road widths.

The BLM, USFS, and AHRA issue commercial SRPs to outfitters, guides, vendors, recreation clubs, and commercial competitive event organizers that provide recreational opportunities or services. SRPs within the BCNM are issued for commercial, competitive, vending, and organized club/group activities and events, such as backpacking, hunting, rock climbing, horseback riding, marathons, mountain biking races, and 4x4 and all-terrain vehicle (ATV) tours. In general, SRPs may be issued for 10 years or less, with annual renewals. The permits are issued to manage visitor use, protect natural and cultural resources, and accommodate commercial recreational uses. AHRA Special Use Authorizations/SUPs for commercial boating activities within the BCNM are issued by AHRA. Private boat permits within the monument can also be issued by AHRA. Special Activity Agreements can also be issued by AHRA within the BCNM.

The AHRA Management Plan is an implementation level plan identifying desired settings, activities, and facility development on the CML. It establishes boating capacity on the Arkansas River through BCNM, which is defined as the river segment extending from Fisherman's Bridge (upstream of BCNM) to Stone Bridge (downstream of BCNM). The daily limits for commercial use on this river segment is 360 boats during the period May 15–September 7 and 50 boats between September 8 and May 14. The AHRA Management Plan also defines boating limits for private users. These limits are 240 boats per day on weekends and 150 boats on weekdays during the May 15–September 7 high use period. The limits drop to 100 private boats per day September 8–May 14. The AHRA Management Plan also defines a launch window for commercial users, which extends from 8:30 am to 3:30 pm (CPW, BLM, and USFS 2019).

The Social Landscape Assessment summarizes the public's perspectives on the social, economic, environmental, and resource conditions of the BCNM (Bartlett 2017). Participants highlighted the importance of a range of recreation opportunities based on the beauty and quality of the river for fishing and boating, a rugged yet accessible landscape, and scenic and primitive features. The monument offers meaning and importance for a variety of reasons; including scenic views, whitewater recreation, biological resources/wildlife, ease of access, learning opportunities, and

economic impacts (CPW 2016a). Overall, the public has a deep appreciation for the unique experiences the monument offers, such as rugged and remote terrain and solitude. There is an awareness that designation of the BCNM comes with both positive and negative effects. With designation, improvements and funding may increase, but it may also increase visitation and the associated challenges in regulation and enforcement. The need for a collaborative management approach among agencies at all levels and user groups was recognized in the Social Landscape Assessment and continues throughout the RMP/EIS process.

The Social Landscape Assessment further identified the following key themes (Bartlett 2017):

- Desire to have adequate and ample facilities to manage high-density areas (e.g., Hecla Junction and Ruby Mountain) and to accommodate a diverse range of uses, but to emphasize low-developed, ‘primitive’ sites to provide more dispersed or rugged experiences without facilities.
- Desire to expand and improve trails and river facilities to accommodate a variety of recreation users (e.g., motorized, equestrian, mountain bikers, seniors, Americans with Disabilities Act [ADA]/Architectural Barriers Act [ABA]), but also provide places in the BCNM that are harder to reach, where solitude can be found.
- Recognition of the BCNM’s historic and cultural heritage resources and a desire for targeted management of these areas, including restoration and interpretation (e.g., mining and railroad sites).
- Recognition of the BCNM’s potential as a place for learning, discovery, and environmental education. The monument’s compact and accessible nature, as well as the uniqueness and diversity of wildlife, geology, history, culture, and recreation opportunities, make this area an ideal learning laboratory.

Additional information on the values of all the BCNM stakeholders is summarized in Section 3.7 of the “Browns Canyon National Monument Management Plan – Environmental Impact Statement Baseline Socioeconomic Report” (Baseline Socioeconomic Report; BLM and USFS 2018b:pp. 20–24).

3.11.2 Methods and Assumptions

The analysis area for determining the effects of the alternatives on recreation is the BCNM boundary.

The analysis uses the following assumptions:

- Recreation is one of the main human uses of the BCNM. Use is increasing due to demographic shifts, statewide tourism, increased desire for outdoor recreation, and advancements and changes in equipment and gear.
- Increased visitation and access may increase impacts on sensitive areas. Non-system social trails along the river result in habitat degradation and increased sedimentation.
- Recreation along the Arkansas River and at Ruby Mountain and Hecla Junction will continued to be primarily managed by the AHRA.
- Areas designated for recreation management are recognized as a primary resource use. Consideration of specific management strategies is required to protect recreation opportunities that rely on natural settings.

- Partnerships have an increasing role in accomplishing sustainable recreation goals, which is supported by a foundation of healthy ecology.
- Recreation provides important personal, community, economic, and societal benefits and is a primary avenue for the public to connect with the outdoors and public lands.

3.11.3 Environmental Consequences

This section describes direct, indirect, and cumulative impacts on recreation from implementation of the management decisions in the RMP. A range of resource and resource use management actions can affect recreation. Adverse impacts would occur from management decisions that either reduce the area of or access to public land open to recreation, or degrade the recreational experience or desired settings and characteristics. Management actions for special status species, vegetation and fuels management, and livestock grazing may result in a direct or indirect adverse impact on recreation opportunities and experiences. Special designations, geology, travel and transportation management, fish and wildlife, and cultural resources have the potential to both adversely and beneficially affect recreation depending on the user. Development and management of these resources and resource uses could create concerns to the recreational user such as noise, dust, and vehicle conflicts; adverse effects on recreation experiences through damage to recreation settings and perceptions of naturalness; or reduced or restricted access to recreation areas. Conversely management of other monument ROVs, such as improving habitat for a specific species would add to the recreation experience of visitors desiring to see that species, would have a beneficial impact on that recreation users.

Management actions that mitigate adverse impacts from visitation increases, protecting water quality from human and dog waste or camping registration systems, may result in a beneficial impact to recreation opportunities and settings. Management actions for recreation and visual resources may result in a beneficial impact on recreation by designating management areas and improving the visitor experience and setting.

3.11.3.1 Direct and Indirect Effects

3.11.3.1.1 Management Area Decisions

Management areas define and help enhance a unique location resulting in a beneficial impact for which the areas is designated by establishing specific goals and objectives, including settings and outcomes, to guide future management. All alternatives include the same amount of total acreage covered by a management area but the boundaries and type of management area vary by alternative. Impacts would vary by the size of the area, geographic boundary, and available recreation opportunities. A broad range of desired activities and experiences occur among visitors to the monument. Therefore, management areas that limit type or level of recreation may result in a negative impact to some user groups but positively impact recreational users seeking solitude. Table 3.1-3 shows the acres of management area for each alternative. Maps 11–13 in Appendix D depict the management areas by alternative.

Under Alternative A, the BLM would continue to manage BLM-administered lands as part of the Arkansas River SRMA as defined by the 1996 RGRMP and the USFS land would continue to be managed by the PSICC Management Area Prescriptions (Appendix D, Map 11) for 2B, 4B, 4D, 5B, and 6B. Impacts to recreation on USFS-administered lands vary depending on the Management Area prescriptions. For example, 4B and 5B favors needs for the designated

indicator species (i.e., Abert's squirrel and elk) and big game. Recreation opportunities in 6B, 2B, and 4D are semi-primitive to rural in nature. Because the SRMA and USFS Management Areas were established prior to the monument designation and extend beyond the analysis area, management actions are generally less detailed and less related to current conditions and trends in the monument. Therefore, Alternative A does not anticipate and proactively prepare for future visitation and population growth resulting in an adverse impact to desired recreation settings and experiences (Bartlett 2017), as well as other monument ROVs.

Alternatives B and C define MZs across the BCNM. MZ frameworks have been developed for each MZ and are presented in Appendix L "Management Zones Frameworks for Recreation and Visitor Services." These frameworks identify key elements of the proposed MZs, including activities, experiences, outcomes, and allowable use activities on BLM-managed lands. Designation of MZs would have long-term beneficial effects on the management and protection of specific recreation opportunities and experiences by guiding the amount and type of uses allowed in response to public scoping and natural and cultural resource sensitivity.

The same MZs identified under alternatives B and C are generally managed for the same settings. However, the boundaries and extents, along with the allowed activities, of MZs vary between alternatives (Table 3.1-3; refer to Appendix L "Management Zones Frameworks for Recreation and Visitor Services"). Alternative B identifies more of the MZ acres as primitive or backcountry versus middle country due to the smaller extent of the Railroad Gulch, Aspen Ridge, and Turret Road, and Monument - River West MZs. Further, because Alternative B applies more limitations compared to Alternative C on the amount and type of recreation opportunities, management under Alternative B would benefit natural and biological uses and recreation users seeking solitude and primitive opportunities to a greater extent than would Alternative C. Alternative C would generally allow for more recreation infrastructure such as trails, trailheads, parking facilities, dispersed camping, and/or campgrounds which would have a beneficial effect on visitors seeking those type of recreation experiences and settings. Both alternatives B and C would allow for management actions that protect visitor health and safety such as fire pan requirements, restrictions on camping at trailheads, and camping duration limits resulting in a beneficial impact to recreational uses and other monument ROVs.

In addition to the allowable uses and allocations defined in the MZs, the RMP includes management actions that are applied across BCNM regardless of MZ. Under all alternatives the USFS-administered lands in the monument would be managed with USFS ROS categories. This includes the construction, reconstruction, and maintenance of developed sites in accordance with these categories.

Alternative C allows for the development of Arkansas River crossing(s) outside of the WSA but within the Arkansas River Shore and Bench, Monument - River East, Monument - River West, and Ruby Mountain - Hecla Junction Access MZs. Alternative B prohibits this allocation, therefore, Alternative C would provide a greater range of recreational opportunities and access to BCNM.

Recreational target shooting is prohibited in Alternative B (Appendix D, Map 14). Alternative C would allow recreational target shooting in BCNM except for high-density areas and travel corridors (Appendix D, Map 15). Under all alternatives the discharge of firearms is prohibited in all developed recreation sites and areas per 43 CFR 8365.2-5(a), 36 CFR 261.10 (d). Further, State and local laws and ordinances regarding use of firearms or other weapons apply per

43 CFR 8365.1-7(c). Alternative B requires human and pet waste collection and disposal in smaller geographic areas (Arkansas River Shore and Passage, Ruby Mountain – Hecla Junction Access, and heavily used WSA trails). Similarly, Alternative C requires human waste collection and disposal in the same areas, and adds Railroad Gulch MZ assuming that higher levels of use would occur there if river crossing(s) were implemented. Both alternatives allow for adaptive management of waste collection and disposal throughout the monument upon monitoring. Requirements for recreational target shooting locations and human and pet waste collection and disposal could increase recreation experiences and could reduce associated negative impacts to health and safety, especially in highly visited areas. Alternative C would have the greatest beneficial impact to human health and safety and make more lands available to target shooting.

Managing visitation increases would generally have beneficial impacts on visitor experience, health, and safety by managing the density of users and variety of uses; however, individual users may be inconvenienced. Alternative B prohibits certain special recreational uses across the monument, such as competitive events (except on the river surface) compared to Alternative C which allows competitive events outside the WSA on a case-by-case basis. Alternative A manages these special use activities only on a case-by-case basis. Additionally, both alternatives B and C include prohibition of camping in trailheads or other facilities intended for day-use only and the allowance of closure and rehabilitation of all undesignated social routes.

3.11.3.1.2 Surface Disturbance and Other Management Restrictions

Management actions from other resources or resource uses may result in an adverse or beneficial impact on recreation opportunities and experiences. Management actions that reduce access or create a change in desired recreational settings and experiences may have a negative effect on recreation. Actions that maintain or enhance recreational opportunities and their settings may result in beneficial impacts.

WSAs, ACECs, WSRs, and Roadless Areas are managed to protect and preserve the unique values and characteristics for which they were designated. Similarly lands with wilderness characteristics are managed to protect the qualities for which they were inventoried in Alternative B. Generally, Alternative B includes the most restrictive management for the protection of resources and special designations, followed by Alternative C and then Alternative A. However, management under all alternatives is oriented toward resource protection and the proper care and management of monument ROVs. While the allotted acres for WSA and Roadless Areas do not vary by alternative, management actions for vegetation, recreation, and lands and realty are more restrictive within these designations under Alternative B. Therefore, the beneficial effects on natural settings and primitive recreation experiences would be greater under Alternative B. Adverse effects from restrictions to access, limits on certain recreation activities, and the development of recreation facilities would be higher under Alternative B than under alternatives C and A.

VRM classes protect and maintain recreation settings by limiting the degree of contrast new activities are permitted to create on the landscape. Alternative B includes the most acres of restrictive VRM classes, followed by alternatives C and A, respectively (Table 3.1-3). In general, more acres of restrictive VRM classes benefit recreational users, particularly those interested in remote and primitive experiences. Conversely, restrictive VRM classes and special designations management can reduce available areas and limit the potential to develop new recreation

facilities that may be desired by those seeking amenities or to develop social recreation opportunities.

Surface disturbances such as fuels management, vegetation treatments, and livestock grazing that reduce access to recreation opportunities or decrease the recreation setting and characteristics would result in short-term direct effects, but may result in long-term beneficial effects on recreation settings where they improve/remove infrastructure and restore vegetation communities. The presence of livestock (cow manure, trail damage and water quality effects in wet areas, trampling of vegetation, and fencing) may result in adverse impacts to recreation users due to undesirable smells, visual quality, and natural settings. Alternative C would allow for more treatments, especially of mechanical means. Therefore, Alternative C would have the greatest adverse impact on recreational use and opportunities followed by Alternative A then Alternative B. Livestock grazing allotment allocations do not vary across alternatives; however, alternatives B and C allow for improvements of range structures and management categories. Therefore, long-term effects would be beneficial to recreation users by improving the recreation setting.

Wildlife management actions that improve habitat and enhance opportunities for wildlife viewing, specifically those for special status species and SCCs, would have a beneficial effect on recreational users seeking that type of experience but similar management actions may result in an adverse impact where they limit access to recreational use. All alternatives allow for avoidance or minimization of surface-disturbing habitats for nesting birds; mitigation associated with public and permitted activities; and modification of infrastructure harmful to birds and bats; and require wildlife-friendly fencing. Alternative B limits SRPs, climbing, camping, large groups, and other incompatible recreational uses during specific seasons to protect raptors, big game, and bighorn sheep; as well as prohibiting new trail development in big game winter range. Therefore, Alternative B would have the greatest adverse effect on recreational uses; however, impacts would primarily be limited to specific seasons.

3.11.3.2 Cumulative Effects

The cumulative impacts analysis area for recreation is the analysis area and surrounding public land accessible to recreation users. This area includes surrounding public lands that could experience recreation impacts due to management decisions in the analysis area. Cumulative impacts may result from activities in adjacent communities, recreation and visitation to nearby public lands, and resource use activities.

Past, present, and reasonably foreseeable recreation projects (i.e., land, travel, and resource management plans on BLM and USFS lands; local planning efforts) in the analysis area would contribute to beneficial cumulative impacts by improving access and activity opportunities to more recreationists. Travel management decisions in the statewide and county transportation plans, as well as other jurisdictions, could have a beneficial impact on recreation. However, closing areas or facilities to recreational users would result in an adverse impact to recreation. Continued growth and urban expansion in the areas adjacent to the analysis area would result in an increased demand for recreation opportunities. The health, safety, and crowding concerns of population and recreation growth and trends; and surface and vegetation changes from continued vegetation and fire treatments, and other projects identified in Appendix J (Cumulative Impact Methodology and Past, Present, and Reasonably Foreseeable Future Actions) would result in adverse cumulative impacts.

3.12 Travel and Transportation Management

3.12.1 Affected Environment

The analysis area for travel and transportation management is the BCNM boundary. The upper Arkansas River valley has long been a primary transportation corridor, from early human inhabitants, to the discovery of gold in the 1850s and the development of the Denver and Rio Grande Railway, to the recreation opportunities offered today. For the purposes of this section, “access” is defined as “public land which is physically and legally capable of being reached by the public.” Foot access on public land is generally unlimited except by one's desire and ability. The river itself is considered to be a legal means of transportation by boat to public land. With this in mind, every acre of public land under consideration has some type of legal access.

Much of the eastern boundary of the BCNM is defined by a rugged high clearance road (NFSR 185) known as Aspen Ridge Road. This road provides several locations where motorized dispersed camping uses occur and access to the highest peaks located within the monument. NFSR 185 is managed under a winter closure south of the Cottonwood Creek drainage on the north end of the BCNM and south of the State Land Board-managed land on the south end of the monument (December 1–April 15). The northern boundary follows BLM 300, NFST 1434A, and NFST 1434. NFST 1434 is an OHV trail open to vehicles 50 inches or less in width; it has a seasonal closure from December 1–April 15 every year. OHV use is well established, diverse, daily, and year-round on the northern monument perimeter where the BCNM adjoins the Fourmile Travel Management Area (BLM Road 300; NFST 1434A and NFST 1434). The southern boundary follows Railroad Gulch, NFSR 184, and other natural features. NFSR 184, also known as Turret Road, extends off of Aspen Ridge and provides the only vehicle access into the interior of the monument via high clearance vehicles or ATV/side-by-side. Vehicle access ends at the USFS and BLM boundary. NFSR 184 is seasonally closed by the USFS for critical winter range for mule deer, elk, and big horn sheep from December 1–April 15. The PSICC is currently undertaking the “Pike and San Isabel National Forests Motorized Travel Plan” that will designate existing roads and trails within and abutting BCNM.

There are three Chaffee County roads that serve as access routes. Maintenance is currently provided by Chaffee County. The region's vehicular transportation system has developed in a manner commensurate with the valley's low-intensity agricultural and recreational economy. Chaffee County Road 301 (Fisherman's Bridge) consists of 1 mile of graveled road providing access to the Fisherman's Bridge Recreation Site from U.S. Highway 285. This segment also serves the Ruby Mountain Recreation Site via County Road 300 (Ruby Mountain Road). County Road 300 provides access to the Ruby Mountain Recreation Site on the east side of the river. County Road 194 (Hecla Junction Road) consists of 2.5 miles of graveled road providing access to Hecla Junction Recreation Site via U.S. Highway 285.

The trailhead just east of the Ruby Mountain Campground provides parking and serves as a jump-off point for the highest concentration of non-motorized/non-mechanized trails. This includes Turret Trail (BLM T6045) that connects Ruby Mountain Trailhead to NFSR 184. The River Bench Trail (BLM T6045A) provides access to a good sample of the northern portion of the BCNM and has an overlook to the Arkansas River. The Catkin Gulch Loop (BLM T6046) provides the deepest access into the monument and a primitive, wilderness type of experience. BLM T6045B connects the river to the trail system via a 9-mile round trip. From Hecla Junction

Campground and Trailhead, Seidel's Suckhole Trail travels along the west bank of the river and has long been used by anglers, hikers, and boaters. The trail is outside of the Arkansas River TMP; therefore, it has not been designated. On the northeastern corner of the BCNM, there is one non-motorized trail (NFST 1435), which is open to hiking, biking, and equestrian use.

From 1995 to 2003, OHV annual sales more than tripled to over 1.1 million vehicles; from 1982 to 2001, driving motor vehicles off road became one of the fastest growing categories of outdoor activity in the country, with western States seeing the highest level of participation (Cordell, Betz, Green, and Stephens 2008). This resulted in a variety of new management challenges for land managers and the county road department that they were not prepared for (BLM 2015a, BLM and USFS 2019b).

Presidential Proclamation 9232 established the following limitations: "Except for emergency or authorized administrative purposes, motorized and mechanized vehicle use in the BCNM shall be allowed only on roads and trails designated for such use, consistent with the care and management of the objects identified above. After the date of the proclamation, new roads or trails may only be designated for motorized vehicle use in areas west of the Arkansas River and at the Ruby Mountain Recreation Site and then only as necessary to provide reasonable river or campground access, consistent with the applicable management plan. Forest Road 184 may be realigned or improved only if for the care and management of the objects identified above or as necessary for public safety."

Sporadic and irregular unauthorized OHV use has been documented in the Sawmill and Green Gulch drainages within the BLM WSA from NFSR 184 and off of NFST 1434. The northeastern corner of the BCNM also has some non-system trails, including one used by a permitted outfitter for guided hiking and horseback tours, as well as several routes that appear to receive some use by the general public. Some of these non-system routes connect to the northern end of NFSR 184 and NFSR 185. Another popular non-system trail (Austin Trail) runs along Railroad Gulch near the southern end of the monument. Furthermore, numerous non-system routes exist along the river corridor and extend upland from popular lunch spots, campsites, and trailheads along the river.

The inactive Denver and Rio Grande Railway, owned by Union Pacific, runs adjacent to the Arkansas River through the BCNM. Presidential Proclamation 9232 recognizes "the operation or use of the existing railroad corridor as a railroad right of way pursuant to valid existing rights or for recreational purposes consistent with the care and management of the objects identified above". The Heart of the Rockies Historical Corridor Rail Trail and similar rails-to-trails concepts have been proposed for decades and would require abandonment or utilization of portions of the Union Pacific rail line from Salida to Leadville. Currently, the rail line has not been abandoned, but instead placed into a "reserve" category. As such, the rails-to-trails proposal has been held in abeyance until the "reserve" process comes to a completion and/or a rails-to-trails plan is proposed/accepted. In 2016, the governor's Colorado the Beautiful Program listed the Stage and Rail Trail project as one of "Colorado's 16" highest priority trails. Refer to Chapter 2 of the Planning Assessment, Section 2.2.2 "Travel and Transportation Management" (BLM and USFS 2018a:pp. 198–207) for more information on existing management direction.

3.12.2 Methods and Assumptions

The analysis area for determining the effects of the alternatives on travel and transportation management is the BCNM boundary and the temporal scale is the planning horizon, or 20 years.

The analysis uses the following assumptions:

- Recreation is the primary human use of the BCNM. Use is increasing due to demographic shifts, statewide tourism, increased desire for outdoor recreation, and advancements and changes in equipment and gear.
- Increasing population pressures and increased sales and use of unmanaged OHVs result in greater resource impacts and increased user conflict.
- Unmanaged travel off of designated or existing routes and the creation of social trails has occurred and will likely continue.
- Existing and valid rights and other authorized uses should not be affected.
- New roads or trails may only be designated for motorized vehicle use in areas west of the Arkansas River and at the Ruby Mountain Recreation Site and then only as necessary to provide reasonable river or campground access
- NFSR 184 may be realigned or improved only if for the care and management of the objects identified above or as necessary for public safety.
- The Fourmile TMP and Arkansas River TMP would remain in place throughout the planning period.
- Any potential additions to the non-motorized trail system would be designated after the completion of the RMP and require subsequent site-specific NEPA analysis with additional public input.

3.12.3 Environmental Consequences

This section describes direct, indirect, and cumulative impacts on travel and transportation from implementation of the management decisions in the RMP. Adverse impacts would occur from management decisions that reduce access to public land open to motorized use. Management actions for non-motorized use may result in a beneficial impact by designating management areas and improving access for non-motorized activities.

3.12.3.1 Direct and Indirect Effects

3.12.3.1.1 OHV Area Designations

All public lands are required to have OHV area designations (43 CFR part 1600 and part 8342.1). Areas must be designated as open, limited, or closed to OHV travel. OHV open areas allow all types of vehicle use at all times. OHV limited areas are restricted to designated routes at certain times, in certain areas, and/or to certain vehicular use. Restrictions are generally within the following categories: number of vehicles, types of vehicles, time or season of vehicle use, permitted or state licensed vehicle use, use on existing roads and trails, use on designated roads and trails, and other restrictions. Closed areas are unavailable for OHV use. The BLM authorized officer may expressly authorize motorized use in closed areas, because such expressly authorized use is exempt from the OHV regulations per 43 CFR 8340 as an official or permitted action. The criteria used to make the area designations are based on the management described in

the alternatives. There are no areas designated as open within the BCNM and no areas proposed as open under any alternatives. Areas are designated as limited or closed and acres of OHV area designations remain the same across alternatives. Area designations would not affect BLM ROWs, permitted uses, county or State roads, or other valid existing rights.

Table 3.1-3 lists the acres of proposed OHV travel management designations by alternative. While area designations would remain consistent across all alternatives, implementation of Alternative B would result in more impacts to access since it focuses more on protecting monument resources, whereas Alternative C focuses on a wider variety recreational opportunities and access. Within the limited area designations, the BCNM plan will be consistent with Presidential Proclamation 9232 and new motorized trails are allowed only west of the Arkansas River and at the Ruby Mountain Recreation Site, only when necessary to provide reasonable river or campground access. MZs that allow for motorized dispersed camping or provide motorized trails would generally benefit motorized recreationists. Conversely, MZs that place restrictions on OHV use or only allow development of non-motorized/mechanized trails could result in adverse impacts to OHV use.

3.12.3.1.2 Travel Priorities and Access Opportunities

Potential effects on access opportunities would occur to varying degrees across all alternatives due to changes in access for research and monitoring, grazing management, recreational use, and/or emergency or fire access. Alternative A would continue current management prescriptions for BLM and USFS consistent with Presidential Proclamation 9232. Existing OHV and mechanized travel would be maintained under Alternative A, consistent with existing travel management decisions, while alternatives B and C would limit OHV and mechanized travel and equipment to designated routes to meet other resource values.

Increased visitation under all alternatives would result in continued pressure on transportation assets, both non-motorized use within BCNM and OHV use in surrounding areas. Allowing mountain biking would attract a new user type to the area. Routes would not be designated as part of this planning level effort. Routes within areas designated as limited under this planning effort would be evaluated under a separate travel management planning effort and impacts would be evaluated at that time.

Public scoping for this EIS revealed a desire for a mechanized trail through the monument from the north to the south. Under alternatives A and C, areas could allow for the designation of a mechanized trail under future travel management planning efforts.

For the Monument - River East MZ, Alternative B prohibits designation of new non-motorized, including mechanized system trails, on-site posting/signing of visitor regulations, and interpretive information. Alternative C allows for the designation of non-motorized, including mechanized system trails, to be evaluated under a separate travel management planning effort and impacts would be evaluated at that time. Refer to the Recreation section of this EIS for additional discussion and analysis of the Monument - River East MZ.

As a result of the issuance of Secretarial Order 3376 (DOI 2019), e-bikes are to be allowed on all trails where other bicycles are allowed. The allowance for e-bikes on trails would be expected to increase trail usage to some extent. Increased access for e-bikes would likely increase opportunities on public lands to riders who have limitations with regard to physical fitness, age, and/or disability. E-bikes would also be expected to result in increased pressure on trailhead

parking, increased social interactions on trails, and increased user conflicts between e-bike riders and traditional non-motorized trail users.

3.12.3.2 Cumulative Effects

The cumulative impacts analysis area for travel and transportation is the analysis area and lands adjacent to the monument, generally the area depicted in Appendix D, Map 1 (Arkansas River Valley Context). Reasonably foreseeable future actions with potential to affect travel and transportation management include actions that increase access, and restrict or close areas to motorized access. Actions that could lead to cumulative impacts would encompass other Federal planning efforts, including the on-going Eastern Colorado RMP, the “Pike and San Isabel National Forests Motorized Travel Plan,” as well as the BLM’s Fourmile and Arkansas River TMPs. Additionally, local planning efforts will also contribute to OHV patterns in the region. Transportation and road networks adjacent to the BCNM analysis area include routes maintained by other Federal, State, and county agencies, and private landowners. Potential increases in visitation under all alternatives, in combinations with traffic from past, present, and future projects that could result in cumulative effects with the analysis area.

3.13 Range and Livestock Grazing

3.13.1 Affected Environment

The BCNM boundary is the analysis area for range and livestock grazing. Livestock grazing within the boundaries of the monument is a traditional use that has occurred on both the BLM and USFS lands for over a hundred years. After enactment of the Taylor Grazing Act in 1934, grazing allotments were created and the number and kind of livestock and the season of use were established for the area.

The BCNM encompasses portions of five BLM allotments and two USFS allotments (Appendix D, Map 25). These allotments are operated by four permittees. Combined, the livestock grazing allotments are located on 17,175 acres of Federal land within the BCNM. BLM lands within the monument are characterized as fragmented forest topography with steep slopes and canyon drainages. Land suitable for livestock grazing is limited to open parks, canyon bottomlands, and gently sloped benches along the Arkansas River. USFS lands are characterized as gentle to rolling sloped forested landscapes with large expanses of open grassland parks. Livestock suitability and forage production are greater on the USFS lands compared to BLM lands.

Permitted livestock grazing on public lands is an essential resource for the ranchers in the Arkansas River Valley and is an important economic contributor that helps preserve the ranching heritage and open space in the valley. Livestock grazing is also one of the main tools the agencies have for managing vegetation across the landscape. Based on the estimated number of AUMs in the BCNM, livestock grazing generates \$37,000 annually in direct economic value for the analysis area (BLM and USFS 2018a). However, recreation and residential development have rapidly expanded throughout the Arkansas River Valley, displacing many local ranches and resulting in loss of forage production and community open space. An overall increase in visitation in Chaffee County has also resulted in conflicts between livestock grazing and recreation use (e.g., access issues and damage to range improvements).

Refer to Chapter 2 of the Planning Assessment, Section 2.2.3 “Range and Livestock Grazing” (BLM and USFS 2018a:pp. 207–217) for tables showing the livestock grazing allotments and AUMs, as well as drivers, stressors and existing management direction.

3.13.2 Methods and Assumptions

The analysis area considered for characterizing conditions and trends for range and livestock grazing is the BCNM boundary. Methods of analysis for Range and Livestock Grazing are in the Planning Criteria Report, Section 3.12.3.

In addition to the Affected Environment above, the analysis uses the following assumptions:

- Livestock grazing would be managed consistent with existing laws.
- Laws, regulations, and policies followed by the BLM or the USFS in issuing and administering grazing permits or leases on lands under their jurisdiction will continue to apply with regard to the lands in the BCNM and management practices that promote healthy sustainable use and while meeting BCNM values.
- Changes in number of livestock, season-of-use and duration-of-use will be based on pertinent monitoring studies and inventory data. In times of drought, BLM and USFS will cooperate with stakeholders for adjustment in livestock use and management.
- Recreation on public lands in Chaffee County has dramatically increased over recent years and the increase is expected to continue, resulting in increased conflicts between user groups. Unauthorized OHV use (such as non-permitted, unlicensed, or unregistered vehicles) occurs, which impacts a variety of resources including livestock grazing.

3.13.3 Environmental Consequences

This section describes direct, indirect, and cumulative impacts on range and livestock grazing from implementation of the management decisions in the RMP. A wide range of management decisions and environmental factors can affect livestock grazing. Adverse impacts on livestock and livestock operations can include loss of AUMs, the introduction and spread of invasive and noxious weed species, and overall compromised rangeland health. Beneficial impacts can result from management actions that increase AUMs and water, reducing or eradicating invasive and noxious weed species, and resolving conflicts with other resources and resource uses (wildlife, mineral extraction, and recreation).

3.13.3.1 Direct and Indirect Effects

3.13.3.1.1 Range Improvement Decisions

Constructing range improvements could improve livestock distribution and allow livestock to use more of the rangeland, which would consequently enhance rangeland conditions.

Conversely, restricting range improvements could affect livestock operations by not supporting effective distribution and thus increasing the cost or time for management.

Nonstructural range improvements designed to reduce the intrusion of nonnative annual grasses and the encroachment of shrubby vegetation could have short-term impacts on livestock grazing, such as removing forage and requiring rest periods from grazing. However, these nonstructural

range improvements would generally enhance rangeland conditions in the long term, including maintaining or improving the available forage, which is the amount of vegetation available for wildlife and livestock use (DiTomaso 2000; Vollmer and Vollmer 2008; Gottfried and Severson 1994). Long- and short-term impacts on grazing would be minimized when the primary objective of nonstructural range improvements is to promote livestock forage availability or support healthy rangeland ecosystems.

Alternatives B and C would provide the most beneficial impacts to range and livestock grazing as they would allow for the removal or upgrades to existing structural and nonstructural range improvements. Alternative A has no similar action and would not provide any additional benefits to range and livestock grazing.

3.13.3.1.2 Recreation Decisions

Livestock grazing occasionally has negative impacts on recreational experiences, such as hiking, biking, and camping. Some users are negatively impacted in areas where livestock leave manure, attract flies, or degrade solitude and aesthetic values. Conversely, recreational activities have negative impacts to livestock operations and management. In areas of heavy recreation use, these impacts may include effects on livestock distribution patterns, harassment of livestock by pets and humans, gates being left open, and disturbance or vandalism to range improvements and food supplements. Impacts to livestock grazing from recreational activities would be reduced under Alternative B due to the management controls placed on recreation users as compared to alternatives A and C.

3.13.3.2 Cumulative Effects

Cumulative impacts consist of reasonably foreseeable future actions within the immediate area surrounding the monument in addition to those related to the management decisions described above that would affect livestock health, forage availability, and livestock grazing operations. This would include surface disturbing activities related to mining activities and future energy development, as well as urban and infrastructure upgrades and expansion that would reduce available acreage and AUMs for livestock grazing. Additionally, granting of ROWs could also contribute to cumulative impacts on livestock grazing. Depending on the type of ROW, some are revegetated and provide an improved forage condition while others may be un-reclaimed for the life of the use, such as roads.

Other cumulative impacts would include natural trends that compromise healthy rangeland conditions such as drought, the spread of noxious and invasive weeds, dispersed camping, heavy trail use from an increase in visitation, and an increase in wildfires. Years with greater precipitation events could have a beneficial impact on the quantity and quality of forage vegetation open to livestock grazing. Furthermore, livestock grazing competes with recreation as the dominant use of the land and relies on healthy rangeland conditions and acreage suitable and available for grazing. High visitor use in the area contributes to the degradation of forage vegetation through trampling from concentrated and dispersed pedestrian-based activities and fugitive dust deposition on vegetation from motorized activities. Continued growth and urban expansion in the areas adjacent to the analysis area would result in an increase in desire for local ranchers to sell their land at real estate prices instead of agricultural land prices. An increased demand for real estate from continued growth would directly lead to a permanent loss of open space and therefore, a loss of available grazing lands and supporting ranching infrastructure.

Refer to Appendix J for a list of past, present, and future projects that could result in cumulative effects with the alternatives.

3.14 Lands and Realty

3.14.1 Affected Environment

The BCNM boundary is the analysis area for ROW, Special Use Authorization (SUA), and land use authorizations. A ROW grant is an authorization to use a specific piece of public land for a certain project, such as a road, pipeline, transmission line, communication site, or energy-related project on public land for a specific period. A SUA is a legal document such as a permit, term permit, lease, or easement, which allows occupancy, use, rights, or privileges of agency land. In general, a BLM ROW or a USFS SUA is granted for a term appropriate to the life of the given project. ROWs and SUAs are issued to other Federal agencies, as well as State, county, and local government agencies. ROWs and SUAs are authorized by grants, leases, or permits. Such authorizations are issued to businesses for commercial purposes and to private citizens for noncommercial purposes. Land use authorizations, when approved within specially designated areas on an individual basis, are subject to stringent stipulations, such as surface reclamation, weed control, and protection of cultural, plant, or wildlife resources.

The following land uses are evident in the landscape of the BCNM: CPW Recreation and Public Purposes (R&PP) leases and development at Ruby Mountain and Hecla Junction, communications facilities, Union Pacific Railroad, and Revised Statute 2477 county roads as shown in Table 2-49 of the Planning Assessment, Section 2.2.4 “Land Use Authorizations, Rights-of-Way and Withdrawals” (BLM and USFS 2018a:pp. 217–223).

There are no private surface inholdings within the BCNM, so only public interests in lands are subject to valid existing rights. However, as residential development increases adjacent to public lands, the potential for trespass and encroachment also increase.

3.14.2 Methods and Assumptions

The BCNM boundary is the analysis area for ROW, SUA, and land use authorizations. Methods of analysis for “Lands and Realty” are in the Planning Criteria Report, Section 3.13.3.

The analysis uses the following assumptions:

- Existing ROWs and SUAs will be managed to maintain valid existing rights.
- Future utilities would be co-located with existing utilities/disturbance within existing ROWs and SUAs; BMPs and/or mitigation measures (e.g., buried utilities) could be considered to address impacts to recreation, scenic, and wildlife resources.
- Residential development adjacent to public lands will continue to increase.
- As a result of the continued increase of residential development the potential for trespass and encroachment will also increase.

3.14.3 Environmental Consequences

This section describes direct, indirect, and cumulative impacts on lands and realty from implementation of the management decisions in the RMP. Impacts on lands and realty stem from

resource and resource use decisions that affect the BLM and USFS's ability to limit permitting ROWs, SUAs, or other land use authorizations.

3.14.3.1 Direct and Indirect Effects

3.14.3.1.1 Land Use

All alternatives would be subject to valid existing rights and recognition of valid land authorizations that existed prior to BCNM establishment. All alternatives would provide for some amount of land use authorizations such as grants, leases, permits, or easements in a manner that protects BCNM ROWs, which can have direct and indirect, long- and short-term impacts on lands and realty. Each land use authorization will be required to comply with terms and conditions to ensure they are operating consistently with the management goals in the analysis area.

It is the BLM and USFS's responsibility to protect public lands from unauthorized uses and encroachment through prevention, detection, and resolution. All alternatives would require efforts to identify, manage, and resolve trespasses and other unauthorized uses.

R&PP leases authorize the sale or lease of public lands for recreational or public purposes to State and local governments and to qualified nonprofit organizations (BLM 2019a). Under Alternative A, additional R&PP leases would be issued within the CML lands under the restriction criteria outlined in the RGRMP. Alternatives B and C would not issue additional R&PP leases within the CML lands.

3.14.3.1.2 Rights-of-Way and Special Use Authorizations

Table 3.1-3 shows the total acres designated as either exclusion or avoidance under all alternatives. Areas designated as exclusion areas are not available for the location of ROWs, SUAs, or other land use authorizations under any conditions. BLM-administered lands that are designated avoidance areas may be available for the location of ROWs or other land use authorizations with site-specific analysis and special terms and conditions. Alternatives A and C would manage lands within the BCNM as avoidance areas. These alternatives would continue to prioritize co-location of compatible ROWs, SUAs, and other land use authorizations when feasible. Additionally, in compliance with BLM Manual 6330, alternatives A and C would not allow ROWs to be permitted within the Browns Canyon WSA, effectively managing the WSA as an exclusion area. Alternative B would manage the monument as an exclusion area. This would provide the greatest level of protection for monument resources. However, demand for future land use authorizations in the monument would be more difficult to accommodate under Alternative B.

3.14.3.1.3 Commercial Filming and Unmanned Aerial Systems

Under Alternative A, commercial filming would continue to be allowed throughout the monument. Proposals within the Browns Canyon WSA would be required to meet BLM Manual 6330 standards. Permits for filming, still photography and use would continue to be subject to environmental review and specific minimal impact criteria. Nevertheless, these activities could result in adverse impacts to recreational users seeking a more primitive recreation experience with less evidence of human activity and less noise. Alternative B would exclude commercial filming in the Browns Canyon WSA. Under Alternative B, commercial filming would be allowed in remaining areas of the monument, subject to review and conditions intended to

protect ROVs. Alternative B would result in a lower level of adverse impacts to recreational users than alternatives A and C. Alternative C would authorize commercial filming throughout the BCNM but would limit the activity to existing highways and pullouts; designated routes, roads, and trails; and previously disturbed or cleared areas.

The use of recreational UASs within the monument would result in impacts to visitors and recreational users, particularly those seeking a more primitive recreation experience with less evidence of human activity and less noise. However, limitations on UASs would also have an adverse impact on users seeking to use UASs for photography or other activities. The use of UASs would be limited under all alternatives, with Alternative B imposing the most limitations. Under Alternative B, casual-use land and takeoff would not be allowed anywhere within BLM-administered lands and would only be allowed for administrative use on a case-by-case basis. Alternative C would restrict casual-use land and takeoff in the Browns Canyon WSA as well as BLM and CPW leased developed recreation areas. Similar to Alternative B, the use of UASs for administrative purposes would be allowed on a case-by-case basis. Under Alternative A, the use of UASs would be allowed in the monument subject to Federal Aviation Administration and USFS Handbook 2709 regulations and BLM 43 CFR 2920 regulations. Alternative A would present the greatest risk of this activity adversely impacting recreational users seeking a more primitive experience as well as greater impacts on other resource values.

3.14.3.2 Cumulative Effects

The cumulative impacts analysis area for lands and realty includes the area adjacent to the monument, generally the area depicted in Appendix D, Map 1. Adjacent development of private lands could provide increased opportunity for trespass onto monument lands. The BLM and the USFS are expecting future growth in demand for land use authorizations including commercial filming permits, communication sites, and utility development, which would affect the lands and realty program as well as resources within the monument. Additional future development of adjacent lands would likely result in additional requests for, and approval of these land use authorizations. Refer to Appendix J for a list of past, present, and future projects that could result in cumulative effects with the alternatives.

3.15 Social and Economic Conditions

3.15.1 Affected Environment

The BLM and USFS Baseline Socioeconomic Report (BLM and USFS 2018b) provides a detailed assessment of the existing social and economic conditions in the socioeconomic analysis area of Chaffee, Park, and Fremont Counties. The following section summarizes key highlights of that baseline report and provides the results of baseline economic modeling that was completed after publication of the Baseline Socioeconomic Report.

Chaffee, Park, and Fremont counties all have a vested interest in the BCNM as they depend economically on recreation that occurs in the monument (Appendix D, Map 26). The analysis area for social and economic conditions includes all lands within Chaffee, Park, and Fremont counties. The majority of economic and social relationships with the BCNM take place within this three-county analysis area.

3.15.1.1 Social Conditions

The population in the analysis area is predominantly white, with minorities making up approximately 18 percent of the population; minorities comprise 32 percent of the Colorado State population (BLM and USFS 2018b). Poverty rates in the analysis area are 11.4, 9.2, and 17.5 percent in Chaffee, Park, and Fremont counties, respectively (BLM and USFS 2018b). Both Park and Fremont counties have a higher percentage of the population in poverty than the Colorado State average of 11 percent. The analysis area does not contain any Tribal reservations or potential environmental justice populations. Refer to Section 3.2 “Environmental Justice” in the Baseline Socioeconomic Report for more information on environmental justice populations and the initial screening analysis (BLM and USFS 2018b:pp. 10–14).

Chaffee County is a cooperating agency in the planning process. Other public stakeholder groups and interested parties were identified through the planning process, including public land access and conservation organizations; livestock grazing permittees; rafting and outdoor recreation organizations; universities and schools; local property owners; and other interested individuals and businesses. These stakeholders hold a deep appreciation for the BCNM and consider it, as well as the Arkansas River segment running through it, a highly sought after ‘special place.’

The BCNM offers meaning and importance to stakeholders for a variety of reasons, including scenic views, whitewater recreation, biological resources/wildlife, ease of access, learning opportunities, and economic values (CPW 2016a). Recreation stakeholders value the recreation opportunities available in the monument and on the Arkansas River, along with the scenic qualities and natural beauty of the area. Livestock grazing has a long history in the area and ranching families have depended on access to grazing lands for generations. The Wild West mining history and railroad heritage is a unique attribute of the BCNM and traditional casual mineral collection near the Arkansas River is valued by some stakeholders. Other stakeholders particularly value opportunities to get away into a wild, remote setting that is easily accessible. Overall, local communities highly value the monument’s opportunities for recreation, scenic quality, relaxation, and solitude (Bartlett 2017). Refer to Section 3.7 “Social Values, Attitudes, and Beliefs” of the Baseline Socioeconomic Report (BLM and USFS 2018b:pp. 20–24) and the Social Landscape Assessment (Bartlett 2017) for more information on the values and beliefs of each stakeholder group.

3.15.1.2 Uses and Values of BLM- and USFS-administered Lands

3.15.1.2.1 Recreation and Livestock Grazing

The economic sectors most relevant to (and potentially affected by) the BCNM planning process are agriculture (including livestock grazing), tourism and recreation, and to a lesser extent, commercial mining. Mining and mining-related jobs in 2015 amounted to less than one percent of the total jobs in each of the counties in the analysis area (Economic Profile System 2017). Although mineral development has occurred historically in some areas of the monument, restrictions associated with the area’s designation as a national monument preclude all future commercial mineral development outside of a limited area that has four existing active mining claims. As such, no BCNM-specific economic analysis of mineral development has been performed.

Agriculture and livestock grazing have historically been important uses of the Federal lands in the analysis area and have traditionally been economically important. Ranching is part of the

cultural identity of the region and is especially important to certain communities and stakeholder groups. Refer to Section 3.13 “Range and Livestock Grazing” of this document and Section 5.3 “Livestock Grazing” in the Baseline Socioeconomic Report (BLM and USFS 2018b:pp. 61-66) for more detailed information on the economic importance of agriculture and livestock grazing.

Recreational activities in the analysis area provide value from both direct expenditures (market values) and nonmarket values, such as increased quality of life for participants. BLM- and USFS-administered lands are used for a variety of recreation pursuits, including backpacking, camping, fishing, hiking, horseback riding, hunting, mountain biking, photography, OHV use, rock climbing, wildlife viewing, and whitewater rafting or kayaking. The service sector, which includes the tourism and recreation-related service industries, is a substantial contributor to labor earnings in all three counties in the analysis area (BLM and USFS 2018b; Economic Profile System 2017). Overnight travel and tourism in the analysis area totaled \$170 million in 2015, approximately 0.9 percent of the total travel and tourism spending in the State of Colorado (Dean Runyan Associates 2016). Refer to Section 3.11 “Recreation” of this document for more information on recreational uses and visitation within the BCNM; refer to Section 5.5 “Recreation” in the Baseline Socioeconomic Report for more information on the economic importance of existing tourism and recreation in the analysis area (BLM and USFS 2018b:pp. 467–73).

The BLM and USFS completed a baseline economic impact analysis model using IMPLAN. The IMPLAN model assesses the economy-wide and industry-specific impacts of the direct spending inter-industry and consumer spending in the local economy and to estimate indirect and induced economic impacts in the local economy that result from BCNM. IMPLAN’s outputs include three types of impacts: *direct* impacts, impacts where spending by the project is focused; *indirect* impacts, impacts from local inter-industry purchases caused by the direct impacts; and *induced* impacts, resulting from re-spending of labor income. The indirect and induced impacts are often referred to as the “multiplier effect.” (ICF 2019).

The results of the IMPLAN model yield the following metrics:

- *Employment*: Represents the jobs created in each industry based on output per worker for each industry.
- *Labor Income*: Includes all forms of employment income generated by the direct impact, including employee compensation (wages and benefits) and proprietor income.
- *Total Value Added*: The net value of output, including labor income, indirect business taxes, and business income.
- *Industry Activity*: Represents the total value of industry activity generated by the direct spending (ICF 2019).

The BLM and USFS estimate that BCNM receives 182,219 annual visitors. Of those visitors, the agencies estimate that 90,000 of the visitors engage in recreation on the river, described as “on-river recreation,” and that 92,219 of the visitors recreate upland of the river, described as “off-river recreation.” On-river recreation economic impacts were developed by applying the recent findings of the AHRA Management Plan’s IMPLAN analysis and estimating the proportion of river recreation use that occurs in BCNM (CPW, BLM, and USFS 2019). The BLM estimates that 42 percent of on-water recreation occurring within AHRA is attributable to BCNM.

Using the estimated annual visitation data described in the preceding paragraph, the BLM and USFS then applied information from a USDA report on spending patterns of outdoor recreational visitors (White, 2017) to estimate the spending resulting from off-river recreation by type of visitor and type of spending. Off-river recreation spending estimates used visit characteristics (e.g., local or non-local) and spending profiles for Pike-San Isabel National Forests as a proxy for BCNM (White 2017). The estimated annual visitor spending for off-river recreation by category and visitor type shown in Table 3.15-1 were distributed to appropriate economic sectors and used in IMPLAN modeling.

Table 3.15-1. Annual Spending for Off-River Visitors to BCNM (2016\$)

Spending Category	Non-Local	Local	Total
Lodging	\$840,751	\$76,602	\$917,353
Restaurant/Bar	\$519,541	\$153,288	\$672,828
Groceries	\$447,745	\$271,703	\$719,448
Gas and oil	\$635,433	\$439,916	\$1,075,349
Other transportation	\$21,945	\$4,209	\$26,154
Activities	\$138,109	\$27,330	\$165,438
Admissions/Fees	\$91,376	\$70,065	\$161,441
Souvenirs/ Other	\$215,647	\$127,384	\$343,031
Total	\$2,910,546	\$1,170,497	\$4,081,043

Source: ICF 2019

The BLM and USFS applied the value of production per AUM and grazing fees to estimate the economic impact of livestock grazing in BCNM. The annual AUM production value from the monument was \$37,408. The agencies assumed a value of production per AUM of \$66.80 (in 2016 dollars) for the 560 AUMs in the monument, based on production value data in the BCNM Socioeconomic Baseline report adjusted for inflation using the Bureau of Labor Statistics' Consumer Price Index (BLM and USFS 2018b; BLS 2019). Grazing fees were assumed at \$1.06 per AUM (\$590.80 total year for BCNM) based on the 2016 federal grazing fee of \$2.11 per AUM adjusted to remove the 50 percent of that fee used to support range improvement (BLM and USFS 2018).

The results from IMPLAN modeling showing the direct, indirect, induced, and total economic impacts are presented in Table 3.15-2 and Table 3.15-3 below. Table 3.15-2 shows the combined economic impacts of on-river recreation, off-river recreation³, and livestock grazing activities in BCNM. To allow for a comparison of their relative effects, Table 3.15-3 provides a by-activity comparison. The substantial difference in annual economic effects from on-river recreation compared to off-river recreation are partially attributed to anticipated higher spending by on-river recreationists coupled with higher employment and associated contributions to the local economy.

³ The modeled economic impacts for off-river recreation are based on the distributed model inputs shown in Table 3.15-1.

Table 3.15-2. Total Annual Economic Impacts of Recreation and Grazing in BCNM - IMPLAN Summary (2016\$)

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	250.7	\$6,162,813	\$10,190,840	\$19,479,632
Indirect Effect	35.0	\$1,121,008	\$1,779,636	\$3,944,661
Induced Effect	33.6	\$1,177,748	\$2,173,652	\$3,944,826
Total Effect	319.3	\$8,461,570	\$14,144,128	\$27,369,118
Multiplier (Total/Direct)	1.27	1.37	1.39	1.41

Source: ICF 2019

Table 3.15-3. Total Annual Economic Effects by Activity Type in BCNM - IMPLAN Summary (2016\$)

Total Effects by Activity	Employment	Labor Income	Total Value Added	Output
On-River Recreation	283	\$7,548,089	\$12,586,708	\$24,518,053
Off-River Recreation	35	\$910,545	\$1,537,385	\$2,800,672
Livestock Grazing	1	\$2,936	\$20,035	\$50,394
Total Effect	319	\$8,461,570	\$14,144,128	\$27,369,118

Source: ICF 2019

3.15.1.3 Nonmarket Values

The term nonmarket values refers to the benefits individuals attribute to experiences of the environment or uses of natural and cultural resources that do not involve market transactions and therefore lack prices. Examples include the benefits received from wildlife viewing, hiking in a wilderness, or hunting for recreation. In examining nonmarket values, economists often distinguish between “use values” and “non-use values.” Use value refers to the benefits an individual derives from some direct experience or activity, such as climbing a spectacular peak, hunting, or wildlife viewing. Economists measure use values by estimating the “consumer surplus” associated with these activities, which is defined as the maximum dollar amount, above any actual payments made, that a consumer would be willing to pay to enjoy a good or service. For instance, hikers pay a market price for gasoline used to reach a trail, but pay nothing to use the trail. Any amount that a recreationist would be willing to pay to use this otherwise free resource represents the nonmarket consumer surplus value of that resource to that consumer. Non-use value refers to the utility or psychological benefit some people derive from the existence of some environmental condition that may never be directly experienced: an unspoiled Grand Canyon or the continued presence of an endangered species. Non-use values, while real, are especially challenging for economists to quantify. Nonmarket values are described in detail in the Baseline Socioeconomic Report (BLM and USFS 2018b:pp. 46-50).

Social values, such as the role of BLM-administered land in local customs and lifestyles discussed in the preceding sub-section, are a type of nonmarket value. Social values associated with specific uses of BLM and USFS-administered land include the importance of public grazing lands to local ranching families and communities. Similarly, tribal uses of BLM and USFS-administered land are not amenable to market valuation but can be considered a type of nonmarket value. Refer to Section 3.4 “Cultural Heritage, Tribal Values and Uses” for additional information.

Nonmarket values of open space and well-managed natural resources also include a broad range of human benefits resulting from healthy ecosystem conditions and functions, collectively referred to as ecosystem service values. The ecosystem service values most relevant to the BLM- and USFS-administered land in BCNM are described in detail in the Baseline Socioeconomic Report (BLM and USFS 2018b:pp. 52-58). Some examples include the provision of forage, cultural services like recreation, and regulating services that provide clean water and air.

3.15.2 Methods and Assumptions

The analysis area for determining the effects of the alternatives on social and economic conditions includes all lands within Chaffee, Park, and Fremont counties and the temporal scale is the planning horizon, or 20 years.

The analysis uses the following assumptions:

- The majority of economic and social relationships with BCNM take place within the planning area.
- Recreation in BCNM is likely to increase in part due to the anticipated population growth in Chaffee County, the Front Range, and Colorado.
- All recreation activities provide social value, which includes increased quality of life for the participants. Recreation and tourism are also important to the analysis area economy (BLM and USFS 2018b).
- Livestock grazing has traditionally been an important economic activity, and it continues as an individual livelihood and local economic contributor (BLM and USFS 2018b). Ranching is part of the cultural identity of the region.
- BLM- and USFS-administered land has and will continue to supply a wide range of nonmarket values to individuals, communities, the State, and the nation.
- BCNM offers meaning and importance for a variety of reasons; including scenic views, whitewater and other recreation, biological resources/wildlife, ease of access, learning opportunities, and economic activity (CPW 2016a, Bartlett 2017). Overall, the public has a deep appreciation for the unique experiences BCNM offers, such as rugged and remote terrain and solitude.
- Changes in the population demographics in the analysis area may affect community values and local uses of land over time.
- Restrictions on traditional, commodity-based uses of public lands may reduce economic activity for individual resource users and for local or regional communities. They may also have social impacts, for instance, on local customs and lifestyles surrounding mining and ranching. Activities and resources available in and around the analysis area will continue to be important to the quality of life of current and future residents.
- Livestock grazing, and recreational fishing represent traditional uses of the BCNM land and known ROVs associated with the monument's designation.

The BLM and USFS examine the management actions of each alternative in each planning process to determine if any have the potential to cause disproportionately high and adverse effects on environmental justice populations, based on the nature of each action. As discussed previously under Section 3.15.1.1 "Social Conditions," no environmental justice populations were identified in the analysis area, therefore, no additional analysis will be conducted on this

topic in this EIS. The BLM and USFS will continue to provide opportunities for all potentially affected communities to participate in the planning process and have effective input to the agencies' decision-making. When a specific project is identified, environmental justice populations and concerns may be reassessed at a finer scale in the implementation-level NEPA document.

3.15.3 Environmental Consequences

This section describes direct, indirect, and cumulative impacts on social and economic conditions from implementation of the management decisions in the RMP. Management that increases the public's sense of place; promotes recreation values and access to ROVs; provides economic contributions to the analysis area; and protects and preserves the social structure of the communities would result in beneficial impacts to the conditions.

Table 3.15-4. Socioeconomic Impacts Summary by Alternative

Resource	Alternative A	Alternative B	Alternative C
Social Conditions	High potential for conflicts between resource conservation/primitive recreation stakeholders and other groups due to lack of specific management direction for recreation and infrastructure development.	Highest potential to increase the beneficial effects to stakeholders with an interest in conservation and solitary and primitive recreation activities.	Highest potential to increase beneficial effects to stakeholders interested in front and middle country recreation activities and associated infrastructure development.
Economic Conditions	Market values associated with livestock grazing and recreation would be relatively unchanged resulting in a low potential to increase local employment and promote continued economic activity for local residents.	Market values associated with livestock grazing and recreation would be relatively unchanged resulting in a low potential to increase local employment and promote continued economic activity for local residents.	High potential to maintain market value associated with livestock grazing. Highest potential to increase market value associated with recreation due to the focus on middle and front country settings and infrastructure.
Nonmarket Values	Low potential to increase non-use values and ecosystem services if current management is unable to prevent degradation of ecosystem or resource conditions.	Highest potential to maintain or increase non-use values and ecosystem services due to the emphasis on protection of monument resources and limits on future recreational infrastructure development.	High potential to maintain or increase non-use values due to management protections for monument ROVs.

Table Acronyms: ROV=resources, objects, and values

3.15.3.1 Direct and Indirect Effects

3.15.3.1.1 Social Conditions

In the Baseline Socioeconomic Report, the Federal agencies identified several BCNM stakeholder groups who could be differently affected by monument management decisions (BLM and USFS 2018b:p.20). Changes in management that supports these groups' sense of place and use of the monument and its ROVs are anticipated to have beneficial effects.

Recreation Stakeholders

Continued access to traditional recreational activities (e.g., fishing, river rafting, camping and hiking, rock climbing) across alternatives provides beneficial impacts to the public's access to ROVs in the BCNM. Generally, Alternative B includes the most restrictive management for the protection of resources and special designations, followed by Alternative C and then Alternative A. However, management under all alternatives is oriented toward resource protection and the proper care and management of monument ROVs. Continuation of existing management under Alternative A provides less emphasis on development of relationships with user communities than under alternatives B and C and fewer opportunities and benefits to create partnerships and related user education to proactively manage conflicting uses. Management under Alternative C promotes increased infrastructure for middle and front country settings; resulting in more benefits to recreation stakeholders that prefer those types of activities than under alternatives A and B.

Recreational use of BCNM is anticipated to increase under all alternatives, and the application of recreation MZs to manage and protect recreation opportunities and experiences in the monument under alternatives B and C could support sectors of the local economy that rely on high quality recreational opportunities and visitation to the monument to a greater extent than management under Alternative A. Continued employment for local residents in recreation and visitor service sectors could also support maintenance of family and other social relationships. The management direction for Alternative B accents the protection of monument ROVs by emphasizing backcountry and primitive recreation and offers greater beneficial impacts to ROV access and the corresponding user's remote and natural sense of place than under alternatives A and C.

Refer to Section 3.11 "Recreation," for information on the effects of recreation management under the various alternatives on distinct recreational user groups.

Livestock Grazing Stakeholders

Ranching is part of the cultural identity of the region, and livestock grazing remains an important activity in the analysis area and on monument lands. Livestock grazing management is the same across alternatives and the continuation of ranching activities, including livestock grazing, provides a beneficial contribution to the social structure of local communities by supporting historic activities and relationships. Refer to Section 3.13 "Range and Livestock Grazing," for information on the effects of monument management under the various alternatives on livestock grazing stakeholders.

Wildlife and Resource Conservation Stakeholders

Promotion of backcountry access and activities under Alternative B provides enhanced opportunities for enjoyment of those activities compared to alternatives A and C. Management strategies under Alternative B would reduce both the potential for conflicts between users and wildlife species and impacts to wildlife habitat, increasing the potential for beneficial effects to stakeholders who value these resources to a greater degree than management under alternatives A and C. The focus on front and middle country management and promotion of associated infrastructure under Alternative C would create greater adverse impacts to resource conservation and wildlife species than under alternatives A and B.

3.15.3.1.2 Economic Conditions

Recreation and tourism activity contributes to local economies by supporting local employment opportunities, creating revenues for tourism-related businesses, and generating tax dollars for local governments. An increase in recreation and tourism also creates opportunities to establish new and expand current local businesses resulting in additional economic activity in local economies. For example, river rafting in BCNM is a targeted destination for tourism that contributes to the local economy from increased demand for support industries such as food service and lodging.

Recreation and visitation in the monument (and associated economic contribution to local communities) is anticipated to increase regardless of the alternative selected, but could increase to a greater degree under Alternative C than under alternatives A and B. Alternative C emphasizes middle and front country recreation and the development/improvement of infrastructure for recreation to a greater degree than do the other alternatives, which could encourage additional visitation and related expenditures that contributes to the local economy. Local employment retains spending and taxes in the community, providing continued economic activity for local residents to a greater degree under Alternative C compared to alternatives A and B. Refer to Section 3.11 “Recreation,” for information on the effects of recreation management under the various alternatives on visitation to the monument. Currently, the agencies do not have sufficient information to quantify changes in recreation visitation under each alternative over time. As a result, the economic impacts associated with each alternative could not be quantified. However, as noted previously, visitation and the corresponding economic contribution are anticipated to increase regardless of the alternative selected; but could increase to a greater degree under Alternative C.

Access by ranchers to historical grazing allotments and continuation of grazing on public lands including the BCNM, contributes to individual livelihoods and the local economy. Since access to forage does not vary across alternatives, the economic impact associated with livestock grazing will be the same across alternatives. Thus, the economic impacts associated with livestock grazing for all alternatives are expected to be similar to those estimated in Section 3.1.3.

3.15.3.1.3 Nonmarket Values

Nonmarket values effected by management in BCNM are discussed qualitatively below. As noted previous these values are not priced, and are therefore difficult to meaningfully quantify.

- The BLM and USFS anticipate recreational visitation would increase in the BCNM, regardless of the alternative selected. This increase in visitation could negatively affect average willingness to pay over the long-term for recreation users seeking solitude. At the same time, willingness to pay could increase in the short and long term for certain recreation users. For example, under Alternative B, primitive recreation would see the highest level of protection and would benefit users seeking this type of experience. Conversely, Alternative C would allow for more recreation infrastructure, expanding opportunities and improving the experience for some recreation activities. This would benefit users seeking those activities.

- Livestock grazing management is generally the same across alternatives and nonmarket value associated with livestock grazing and ranching on public lands would continue much as they are now. Stakeholders who believe livestock grazing on public lands adversely impact rangeland health and conflict with other uses would continue to experience adverse nonmarket values.
- All alternatives would generally maintain and protect ecosystem service values associated with the BCNM. However, it is possible that additional resource protective measures employed under Alternative B could better protect and improve ecosystem service values in the long-term compared to alternatives A and C. Refer to the resource sections in this EIS (e.g., Watersheds, Soils, and Water Resources or Wildlife and Fish) for information on the nonmarket values of those resources and how they benefit people. For example, maintenance of healthy riparian zones helps protect water quality. This is an ecosystem service value because waterways contribute to downstream water supplies and recharge of groundwater supplies.

3.15.3.2 Cumulative Effects

The cumulative impacts analysis area for social and economic conditions is the analysis area. This would include population growth and trends in the study area. Increases in State and local recreationists in BCNM and increased visitation from outside Colorado and the United States would continue to contribute to local economic activity in the region across alternatives. Continued growth and urban expansion in the areas adjacent to the analysis area would result in an increased demand for recreation, and an increased number of visitors and an influx of new workers and families would change the social dynamics of the local communities. This change would occur across alternatives and it is unknown if this would be an adverse or beneficial impact. Increased residential development in the analysis area and nearby communities would likely increase visitor use on BCNM, potentially reducing opportunities for solitude, an adverse impact that would be experienced more under Alternative B than under alternatives A and C.

The cumulative effect of managing public lands across alternatives to respond to the expected increase in visitation, changes in recreational demand, and a broadening range of recreational activities would create incremental effects to the economy of the area. The continued increase in urbanization and recreational demand could increase potential conflicts between use of lands for recreation and for other resources such as livestock grazing, stressing social relationships. Additional proactive management under alternatives B and C would lessen some of these user conflicts compared to Alternative A, enhancing access and experiences for recreationalists and other users of the land.

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